CHILD DEVELOPMENT

Physical and Psychological Growth Through Adolescence

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PREFACE

This edition is the fifth of a book first published in 1943 and revised in 1949, 1955 and 1960. In the intervening years, especially the past five, research in child development has moved rapidly in the sociological and psychological areas. This research has modified our understanding of the mechanisms of heredity, of the interrelationships between physical and psychological development, between sensation, perception and cognition and between personality and intellectual development. Much work has been done in sex role identification; in the development of conscience or super-ego; in infant and early childhood development, especially in the mother-child interrelationship; and in the individuality of each newborn child in such characteristics as sensory reactions, motor activity, physiological and psychological thresholds.

Increasing amounts of experimental work have been done in countries other than the United States; namely, in Canada, England, France, India, Japan, Russia and Switzerland. Most of this work has been presented in about equal amounts in English, French and Russian, Piaget's work accounting for much of the French language publications.

Many theories have been proposed and many experimental studies have been presented in the past forty years of work in child development. Some of these have been superseded or contradicted by intervening work, but many others have endured to be reaffirmed,

1930 and 1940 datelines in this edition.

We have tried to keep documentation from interrupting the flow of thought as the student reads, yet have felt it necessary to insert author and date in such instances as serve to orient the student to the time period in which the work was done.

Since the advent of mass media, especially of television and of mass advertising, children and young people have been bombarded with influences that sometimes support, but too often compete with, parental standards and hopes. It becomes important, then, to give young people a background of facts and principles upon which to found their own judgments of values and behavior. We have tried to present authenticated material and enduring principles that have sound experimental and clinical work to support them.

As in previous editions, we have tried to present an eclectic point of view, not in the sense of merely citing differing theories, but rather in the sense of interpretation and practical application of theory wherever it seems to us most relevant. It is our hope that in this way the material presented will not only be well founded but will interest the student to pursue further the differing theoretical viewpoints.

We have tried also to present something of the complexity of human beings, endeavoring to make clear that the individual is what he is and does what he does at any given moment of his life because of his genetic background; his prenatal environment; his postnatal development, experience and training; and the circumstances of his present (immediate) environment. Each individual is a physical and a psychological being. Whatever he is in physical or intellectual or personality previous editions, will be useful to parents whose influence on children is the first and most pervasive influence of the developmental years. Schoolteachers influence children profoundly. A year in any given teacher's homeroom or academic class leaves its mark not only on the child's academic development but also upon his health, his attitudes and feelings about learning, about adult authority, about society's institutions and about living and working with his peers. Social workers and clinicians meet children at important crises in their lives; whatever they do with children carries the permanence of vividness and dramatic excitement. Contact with a social worker, doctor, dentist or nurse may, depending upon the background experience and the personality structure of the child, leave an impression upon the child's attitudes and feelings—favorable if the professional person understands the child and approaches him skillfully, unfavorable if the reverse is true. It is our experience that these professional workers and the children they contact profit from their improved knowledge of child development.

We would like to urge college teachers not to use this book as a text alone, but rather as a focus for vigorous class discussion of experiences and observations made by the students. The Experiences to Vitalize Class Work at the ends of chapters are suggestive of ways in which students may enrich their understanding of children. Many teachers have found it a successful plan to send out student committees, each to study a particular aspect of the material and to report to the class for general information and discussion. Every attempt should be made by the teacher to keep discussions constantly referred to scientific and published materials, thus seeing

that students gain not only local color and interest but acquire a genuine background of substantial knowledge. References to current literature have been included at the end of each chapter in order to broaden the student's knowledge beyond the materials and viewpoints included in the text. The references are so chosen that several of the same books are used repeatedly, thus making it possible for the library to set up a reference shelf for the course. Many teachers find it helpful to assign individual students or groups of students to read some of the original studies in these references and report on them to the class. It is also helpful to have the examinations (or at least part of them) take the form of problems assigned in advance and designed to summarize and integrate knowledge previously learned.

Many teachers find occasional use of films a valuable supplementary teaching device. At the end of the book is a list of films and film sources that the authors have found to be useful in connection with the subject matter of each chapter. It is assumed that only a few of those suggested will be used. Each is annotated, and running times are indicated in order to assist the teacher in making selections. Most teachers have found that the 10- to 12-minute films can be used frequently, but that the 35- to 50-minute films must be carefully selected if they are to supplement rather than to replace other teaching devices and crowd out valuable factual material.

In order to avoid too extensive footnotes we have used parentheses with author and date which refer to items in the reference bibliography at the end of the book.

Without the work of the various Child Development Research Centers and of other research personnel this book would not have been possible. We are grateful to the several readers who have criticized the earlier editions and given help in the preparation of this revision, particularly Dr. Wilton M. Krogman and Dr. Harold W. Stevenson. The W. B. Saunders Company has also given invaluable assistance in the preparation of the manuscript.

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CONTENTS

Intelligent handling of children requires a knowledge of how children develop, and how such development can be influenced favorably. It is based not only upon knowledge of general principles but also upon an understanding of each child encountered: What has made him what he is? How does he compare with other children? What direction should his development take?

Let us, then, in this introductory chapter, look at some of the general aspects of development. Later we shall study its stages and patterns more in detail. What are the developmental tasks which an individual must achieve in order to reach maturity and live a satisfying life in terms of self and society (Havighurst, 1953)? What is development? What are some of the laws which govern it? Does each child develop "according to the law"? How can we utilize these laws to know what to expect from children and how to promote their well-being? How are people trying to further knowledge of the many aspects of development?

THE STORY OF CAROL AND HOW SHE MET THE TASKS OF DEVELOPMENT

General Background. Carol was the only child of parents who had been married twelve years at the time of her birth. She was particularly welcomed since her mother had had three unsuc-

cessful pregnancies and even this one had been hazardous. Carol was surrounded by love and a desire on the part of her parents to understand and provide for all her needs. At the same time, through consistent discipline, they provided the means of developing a set of values which they believed to be important if a child is to be a happy and contributing member of society. A promise made was always kept. Reasons were always given for granting or denying requests. Carol knew that a "no" meant "no," a "yes" meant "yes." Carol's family lived in a large city. Her parents were engaged in a business enterprise which was managed at home. They were financially comfortable. In addition to her parents, Carol had a devoted nursemaid throughout her infancy and early childhood.

Carol had a room well stocked with playthings. Experiences of a nature compatible with her age and development were provided from the many cultural and social opportunities available in the city. At 2½, whe was enrolled in a nursery school so that she might have experiences with children. She went to Sunday school. Later, during her school years, the family continued to draw on the resources of the city to provide stimulating learning experiences for her. In all these years she had the stabilizing background of love and security. In this environment Carol grew up and achieved the succession of developmental tasks which are required of a child in order to arrive at maturity. This she did in her own inimitable way.

Carol was a small, somewhat frail looking baby. Throughout her childhood she was a very slender girl of average height. Her gains were somewhat irregular in the early years but became steady later. She was about a year behind most girls in her adolescent growth spurt and in menarche. She was advanced in mental development.

Infancy and Early Childhood. The developmental tasks of infancy and early childhood were accomplished on time and provided the basis for later learnings. Carol was *walking* alone with a steady and sure gait at one year and three months. She was *eating solid foods* in the second year, but for some time she was a slow, deliberate chewer. *Bowel training* was complete before the end of the first year. Training for *bladder control* began at one year and was completed by two.

From the beginning Carol had no difficulty in learning that she was a girl, and thus began the *development of her sex role.* She was always dressed daintily in feminine looking clothes. Her playthings included dolls and housekeeping equipment. A great deal of her play dealt with family life. Observations in the nursery school toilet room helped her to learn the anatomical differences between boys and girls.

Facility in language began early and continued. At 4½ years in a test situation she was able to define or describe eight words with such definitions as orange—"has juice in it"; envelope—"put letters in it"; lecture—"go to it and men talk."

She learned to *relate herself emotionally to her parents and other people.* During infancy she was surrounded by adults. Her mother and father and also her nurse became the most important people in her life. She approached strangers timidly. Nursery school was a strange place with strange adults, and children who were even stranger. She met this new experience with caution. She left her mother reluctantly and with tears. Gradually, by staying only part of the day, later remaining for lunch and, finally, staying for the whole day, she became accustomed to the school. As she began to feel more comfortable she changed

from a passive onlooker to an active participant. This was her first real contact with other children. They fascinated her. She watched them in all their activities, talked about them at home and, before long, began playing with some. For a time she let others direct her play. The school was now a part of her domain. She walked with almost a swagger, indicating an increasing self-possession. Before leaving nursery school two years later, she was telling the children what to do in a rather peremptory manner. The children liked her in spite of her bossiness because she was forgiving, held no grudges and was thoughtful of others. Carol was always on the spot to sympathize when someone was hurt.

During her preschool years she had developed warm friendships with many of the children, both boys and girls; she was cooperative, responsive to suggestions and courteous to adults, while maintaining a warm attachment to her parents and especially to her father.

In addition, she was learning *concepts of physical and social reality.* Her family and her teachers were those who looked after her and met her needs. As a basis for later cognitive development, she learned to group a number of perceptions and called them by one name such as "man," "good." She pasted pieces of colored paper and said, "That's a house—a round house." She played the role of "daddy," "nurse," "teacher." She had a rabbit and visited the zoo to see the other "animals." Before leaving nursery school she was able to tell time.

She was also learning to *distinguish right from wrong* or, in other words, to *develop a conscience.* Her play showed that she had incorporated her parents' warnings. She was heard to say, "Sonny, now stop it! Mother's reading." She took turns willingly. She had a sense of justice.

Middle Childhood. At 5 years, 7 months, Carol entered kindergarten. She was moving into a world of games and work that required neuromuscular skills and also into a world of adult concepts of logic, symbolism and communication. During middle childhood some new tasks had to be accomplished and some old ones continued but on a higher level. Among the old tasks to be improved was the *achievement of control over her body.* She had begun during her preschool years to learn some physical skills. Her father had begun to teach her to swim at 3 years. She had no fear of the water and learned to swim easily. By 11 years she not only could swim well but also could do high diving proficiently. She was roller skating at 5 years. In her twelfth year she acquired a bicycle. Carol tended to choose less strenuous activities and preferred to spend her recreational time in fine motor activities rather than outdoor games.

She further developed a *wholesome attitude toward herself* as a growing organism. She learned to live in accordance with her available energy. When tired, she withdrew from companions for a while. Everything she did, she did wholeheartedly. She had amazing vitality, which became more and more apparent as she grew.

She acquired a good set of health habits. Routines of daily living were established early and adhered to. By the end of this period she was preparing her own breakfast frequently and was at least partially responsible for going to bed at a reasonable hour. Going to bed for her was a positive experience; it was natural to go to bed when tired. Carol in her early years had more than her share of respiratory illnesses, a fact which might have helped to impress upon her the need for health protection. She accepted physical injury calmly, took defeat well. During these years Carol was active and busy, enjoyed everything, was aware of her abilities, rather self-

critical, motivated to be the first to find solutions in games, and realistic about facing the realities of life whether they meant going for a mental test which interfered with her activities, or denial of a request. She operated on the principle of "let's get at it and get it done."

During these middle childhood years Carol was *learning to get along with her peers.* Characteristics that were noted in the preschool years continued to be evident. On the one hand, she tried to manage the other children and to tell them what to do either in a frank, outspoken manner, or by subtle methods and devices. She reproved children for their behavior. She was impatient and sometimes intolerant. Her keen mind and her high standards for herself and others made it difficult for her to tolerate a poor performance. On the other hand, she was generous in sharing her activities and possessions, sympathetic and helpful even to those whom she did not like.

In these years she was also continuing to learn *what it means to be a girl and what is expected of one.* She especially adored her father and considered him her best friend. In addition, she had opportunities in mixed recreational groups and in social dancing situations to practice the role of being a girl. In her twelfth year she reported that she had a "boy friend" who lived nearby. She said, "We don't see each other very often but when we do we just talk."

With her superior intelligence and her strong intellectual curiosity she learned the *fundamental skills in reading, writing and calculating* with great facility. Her grades in school were always high.

She continued to increase her store of *concepts necessary for everyday living.* Through her many experiences her concepts accumulated and became more complex; reading, radio and television were important sources of new ideas. One day during a mental test, after answering a question, she asked, "Am I right?" The examiner said, "Yes, pretty good." Carol replied, "Why was it just pretty good? Was it wrong?"

Another task with roots in the earlier years was that of the developing *inner moral controls, morality and a sense of values.* She learned respect for rules of behavior from her parents at first and later in her activities with her peers. She learned to play with fairness and to follow the rules in games. During these years she learned to bargain and to cooperate with others and found it effective. She was learning to make choices based on more than current whims.

Adolescence. In the adolescent years *the tasks of accepting her physique and achieving an appropriate sex role* offered no difficulties. She did not show a particular dissatisfaction with herself. She was still, as earlier, facing realities squarely and her physique was one of these realities. She passed through the changes at puberty without storm or stress. Even her acne she took philosophically. She also played a feminine role with satisfaction. In her thirteenth year she had taken over the care of her room. She like to go shopping at the grocery store.

She grew up in her relationships with her age mates. In college she took a 5-year nursing course. In this work she had ample opportunity to learn to work for a common purpose transcending petty personal feelings. She was capable of forming warm and lasting friendships. In her sixteenth year it was evident that she was reaching out to an understanding of adult social interaction. Her earlier social experiences had formed a basis for acquiring social skills in group activities. She doubled-dated in college and paired off with a boy whom she later married.

Like other adolescents she had the inner struggle of *achieving emotional*

independence from her parents and other adults. For a time she wore an air of pseudosophistication, perhaps as a kind of armor. But by 16 she was ready to compromise with authority. Regulations by that time became more meaningful and acceptable to her. She left home for the first time when she went to college.

Carol should be a good manager as an adult. As a child she had the example of parents who managed their business shrewdly. Even at an early age she was a good bargainer, making bargains with her parents to her own advantage. She was enterprising in raising money when she needed it for a particular project. Thus she learned the value of money.

Her *choice of a profession* began during high school years when she decided to be a nurse. In order to learn something of the involvements of a nursing career she did volunteer work in a hospital during the summer vacation. Later she enrolled in a university where a 5-year course led to a bachelor's degree as well as a nursing certificate. Upon graduation she took a position in the university hospital.

In high school and college she maintained a high scholastic record. With her superior intelligence it was possible for her to *widen her intellectual horizons*. She learned to cope with the bigger issues such as problems of democracy and building conscious values in harmony with an adequate scientific world picture.

Throughout adolescence Carol was growing in the area of *socially responsible behavior*. When it came time to select a secondary school she chose a public rather than a private school because of the opportunity to meet different kinds of people. During the adolescent years her responsiveness to emotional stimuli changed from an egocentric, demanding type to a more socially oriented type. Her interests broadened beyond the mere satisfaction or control of immediate needs. In her eighteenth year, for example, she was highly motivated to perform well in a mental test even though she had not wanted to come for the test.

Another adolescent task, that of *preparing for marriage and family life*, has its roots in early life and the day-to-day experiences throughout childhood and adolescence. Carol had a good life in her family. Even though an only child, she developed warm feelings for others and interest in younger children. Later, she baby-sat and took care of children in her block.

Adulthood. Carol is now an adult. She became engaged during college, has since married and has a child. She is helping her husband to become established in his profession and enjoying her role as homemaker and mother.

The story of Carol has been told in terms of successive achievements in development. The processes by which these achievements take place are discussed throughout the book.

DEVELOPMENT

Definition. Development can be defined as the emerging and expanding of capacities of the individual to provide progressively greater facility in functioning. (Growth, as an over-all term, is often used synonymously with development, as will be done in this text.) Thus the child increases in motor skills from his uncertain first steps to a high proficiency in skilled games at adolescence; from physiological instability to stability; from his first babbling in infancy to manipulation of language in abstract thinking; from confusion of self with inanimate objects to a clear realization of himself as a person; from the immature child to the man or woman who is able to reproduce.

This development is made possible by a dynamic relationship between the individual and his environment. The

continuous interaction of child and environment provides for the many and complicated changes which characterize development.

J. E. Anderson (1957) says of this developing organism:

> "What manner of thing is the person we study from birth on to maturity? Even the most superficial observation reveals a very complex system moving forward in time by growing in complexity and size. This system receives much stimulation from the outside world and reacts to that stimulation in many and varied ways. As it grows, it contacts a wider and wider range of objects and persons; its ability to solve problems increases, it builds up many habits and skills; it gains in knowledge and self-control. It is a complex manifold of many characteristics and potentials which together make up the total shape or form we call a human being."

Development is achieved through the processes of growth (change in size), maturation (qualitative change not induced by learning) and learning (change through experience). Krogman (1950a) defines maturation as aging; Baldwin (1955) as increase in competence and adaptability. The biological processes involved are termed growth and differentiation.

Quantitative and Qualitative Aspects. The processes of development, maturation and learning indicate that development has two aspects of change, those of quantity and quality. They are not interchangeable but are inseparable. It is said that a child "grows" and "grows up." He "grows" in size; he "grows up" or matures in structure and function. In maturing he passes through successive changes that indicate his progress. Because these changes indicate advances in growth or development, they are called maturity indicators. Ultimately, when the individual has passed through each successive stage of development, he reaches the end of this process, which is called maturity. In some aspects of life, maturity arrives at a fairly early age; in others, much later.

There are many illustrations of this "growing up" process which accompanies growth in size. The baby's digestive tract, for example, not only grows in size but also changes in structure. This permits digestion of more complex foods and increases the efficiency of conversion of foods into simpler forms which the body can use. The child, therefore, can widen his experiences with foods as he grows and this will, in turn, contribute to his physical well-being. The structure and functional efficiency of the many organs change with development. Younger children are not only smaller than older ones; they are also immature, both physically and psychologically.

The younger the child the more direct and uninhibited are his emotions. Babies feel things "with all of themselves," being completely joyous or completely miserable about rather obvious things. Differentiation of structure and accumulation of experience produce more and more complex emotional reactions to more and more complicated situations. If we permit children to go on expressing "full-blast" emotions about babyish things instead of helping them to grow into greater controls and more "civilized" responses to more "grown-up" situations, we are not helping them to live up to their growth potentialities.

Some people, failing to understand this double aspect of development, do not realize that children's intellectual capacity and character traits are essentially different from those of adults. They have simply not "grown up" any more than they have "grown."

These aspects of "growing up" are discussed later under the effect of maturation upon learning. We have many experiments to prove that children cannot learn what they are not ready through growth or maturity to learn.

Another aspect of qualitative growth

concerns the chemical components of bones, muscles, fat, nerves, blood and all other parts of the body. Technological advances in biochemistry are making it possible to learn about the metabolism of these chemical substances. In time, the student of child development can expect to learn more about this aspect of growth than is now known.

LAWS GOVERNING DEVELOPMENT

Continuous and Orderly Process. Growth is a continuous process that moves with an urgency supplied from deep inner sources. The relatively helpless, unskilled, uncontrolled infant achieves the succession of developmental tasks by an orderly sequence of acquisitions. He will grow because of a strong impulse to develop that is inherent in the organism; and his development will be orderly—the product of his innate gifts of inheritance, interacting with his environment.

Increase in size occurs with a regularity that gives prediction some accuracy (Tanner, 1960). In the study of change in physical complexity due to maturation, a usual pattern of unfolding has been identified; e.g., in prenatal sequences from the fertilized egg to the infant at birth (Patten, 1953), in endocrine glands from birth to adolescence (Watterson, 1959), and in the sequence of skeletal development (Greulich and Pyle, 1959).

Because growth is continuous, what happens at one stage carries over into and influences the next and ensuing stages. Thus, many experiences in early life are significant in determining both physiological and psychological functions in later years. Strength and weakness with which the hazards of middle age will be met, for example, may be detected in the developmental pattern of the child.

Even the seemingly sudden spurts in tempo of development lead into and grow out of quieter, less dramatic periods. Parents rightly celebrate the appearance of baby's first tooth, the first independent step in walking, or the first word spoken, the first evidence of reading ability, or the first "date" with a girl (or boy) in adolescence. Each of these noticeable changes is a sort of graduation from the school of preliminary developments. The first step in walking cannot be taken until a long chain of learnings in bodily control has preceded (see Chapter 8). This is true also of the first word spoken, the first evidence of successful adjustment to other children, or any other conspicuous event in growth. Each of them is a milestone which marks progress in a long process.

Fortunately for students of child development, these milestones appear in an orderly sequence. It is not difficult to chart the steps by which growth takes place or to describe the patterns which it follows. No child, for example, learns to walk without having first learned to stand, nor does any child speak clearly before he has passed through the babble stage of syllables in language. As Miller (1951) says: "Developmentally, the child babbles before he uses words; he uses words before he uses phrases, and phrases before sentences. These stages of language development are similar for all normal children." For the great mass of children, such patterns or stages of learning follow each other in so fixed a sequence that the next stage can be anticipated.

Developmental Pace. These sequences of development do not move along in time at a steady pace. Maturity indicators do not appear at regular intervals. There are periods of accelerated growth and periods of decelerated growth. During infancy growth moves swiftly and the maturity indi-
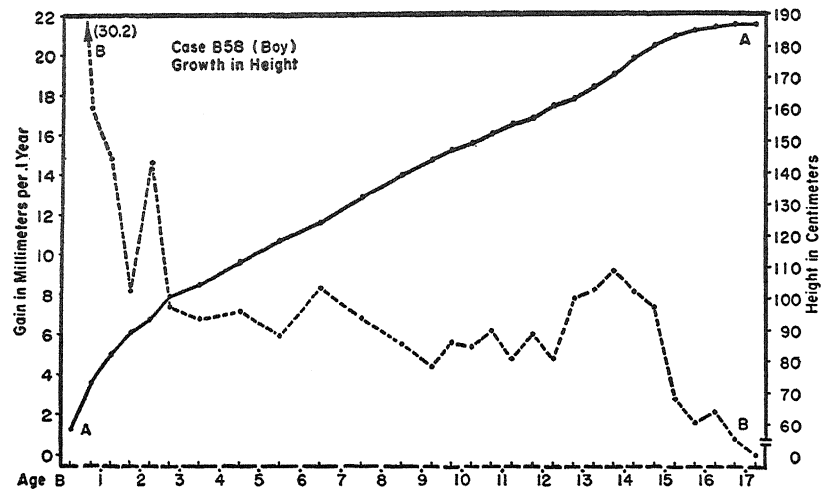
FIGURE 1. Growth in height of a boy, expressed in Profile A as height at successive chronologic years and in Profile B as growth rate during successive periods, illustrates the changes in tempo of growth. (From Stolz, H. R., and Stolz, L. M.: Somatic Development of Adolescent Boys. New York, The Macmillan Co., 1951.)

cators of various aspects of growth appear in rapid succession. During the preschool and school years the rate of growth slackens. But this does not mean that significant changes are not taking place. At the beginning of adolescence (it begins with the spurt of growth in height), certain phases of growth become accelerated before they taper off to the adult level. Figure 1 illustrates the change in tempo of growth. It shows the growth profiles of height for a boy and demonstrates the rapid growth in infancy, the slower growth during the preschool and school years before pubescence, and the puberal acceleration followed by the tapering off of growth during later adolescence. Profile A shows the general trend of his growth; Profile B shows growth rate during successive periods. This pattern, with the exception of the puberal spurt, would be as evident in typical intelligence growth curves.

Differing Rates of Growth. Not all aspects of growth develop at the same rate at the same time; that is, they do not proceed along an even front. For example, parents often worry because children characteristically speak three to five words at 12 months of age, but in the next 3 or 4 months they may not acquire new words and may even forget the ones they knew. Language growth slows up for the time being because the child's physical energy and enthusiasm for learning are thoroughly occupied with the thrills of upright locomotion. Development in general bodily skill spurts ahead at this time, apparently leaving little growth energy (if we may use such a phrase) for language development. Similarly, schoolwork sometimes suffers a slump while children's growth energy is being expended on the rapid increase in height and weight characteristic of early adolescence. (Social and emotional factors also affect schoolwork.) At this same time, academic loads are stepped up in junior and senior high school; and extracurricular activities, homework and rapidly increasing social interests frequently replace the extra hours of sleep that rapid physical growth requires.

The classic example of how some of the different parts of the body grow in size at varying rates at given ages is shown in Figure 2. We have no comparable charts to show tempo of growth in intellect and character. We can see that the nervous system grows rapidly in earlier years. This parallels rapid acquisition of control over the body, and rapid expansion of intellectual capacities. On the other hand, the most rapid growth of the genital system occurs during early adolescence. Social-sexual interests and emotional capacities increase concurrently or soon afterward.

Modification of Rate and Pattern. Although patterns are fairly definite for all children, both rate and exact pattern can be modified through a variety of factors, including genetic accidents (mutations), interference with fetal development especially in the early months of prenatal life when the organs and systems of the body are being formed, brain damage and an environment after birth which deprives a child of gratification of his fundamental needs or even presents hazards to health and development. Nutrition, activity, rest, psychological challenge, opportunity to learn, security in affection, an adequate and understanding discipline and many other circumstances are of great importance in determining how fast and to what extent the potentialities of the child will be realized (Ingalls, 1960).

Around the world there are children who have been so poorly fed during their growing years that they have been unable to achieve healthy growth. Psychological deprivations are also producing damaged personalities. The resilience of the growing mind and body has its limitations if environmental conditions prove to be too unfavorable for growth. Of the hazards to health and development, radiation is of growing concern because of the possible spread of radioactive materials from atomic bombs and experimentation in nuclear fission. (For further discussion, see Chapter 2.)
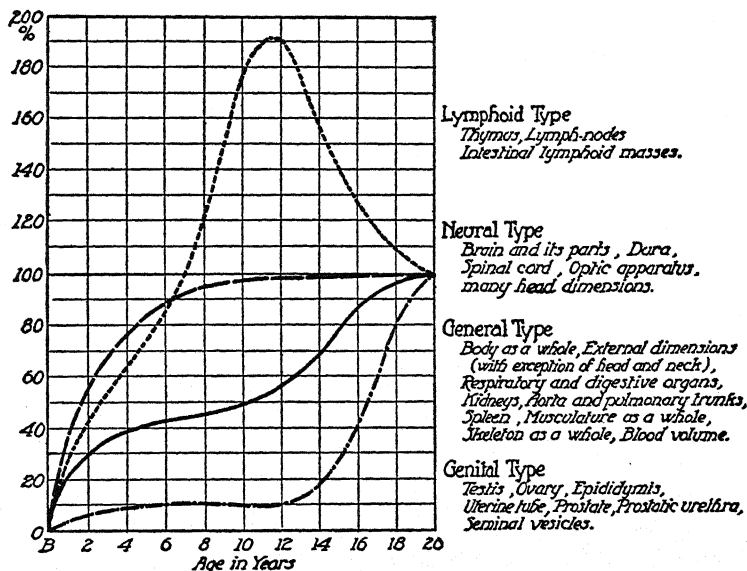
FIGURE 2. A graph showing the major types of postnatal growth of the various parts and organs of the body. The several curves are drawn to a common scale by computing their values at successive ages in terms of their total postnatal increments (to 20 years). (Scammon, in Harris: The Measurement of Man. The University of Minnesota Press, 1930.)

Another obstacle to development in some parts of the world may be a lack of iodine in community drinking water or in foods that results in an increase in cretinism (dwarfism due to inadequate thyroid secretion). This can be controlled by providing the needed iodine as, for example, in salt.

Deficiences in affection and security in childhood may leave permanent scars on the personality in the form of explosive tempers, "grudges," fears, and other severe handicaps to the adequate functioning of personality.

On the other hand, if a child's inheritance is good and if he has adequate diet, security in love, good teaching and other favorable circumstances, he will develop to his full potential. We cannot, however, set up ideal environments, even if we wished to do so. Human nature has its weaknesses; germs exist in abundance; accidents will happen. Fortunately, the body and the personality have great resiliency. They can make up for temporary retardations, provided the disturbing factors are removed in time or the accidental damage is not too devastating. We must, in fact, consciously avoid an attempt to set up a too protected environment since, if the child is reared in early years in an aseptic (germ-free) atmosphere, he develops no immunity to life's ordinary germs; if he is protected and coddled excessively, he tends to become what is known as a spoiled child; if he struggles for nothing, he gains little if any moral strength.

Uniqueness of Individuals. Some children are tall and some short, some slender, others stocky. Some are physically strong, others are weak; some are intellectually keen, others are dull. There are the energetic and the phlegmatic, the agile and the awkward, the courageous and the fearful, the outgoing and the ingoing in personality. Almost every trait measured by any scale scatters individuals along a distribution known as "the normal probability curve," or "the range of normal probability." Figures 3 and 4 depict normal distribution of traits. We can see from this that there is a midpoint, or theoretical average. It is quite possible that no given person in any group would measure exactly at the theoretic average for his group in any given trait. Two-thirds of the group will fall between plus one and minus one sigma (σ) (Fig. 3). The so-called range of normality may spread even beyond this area for individual children. Extremes may or may not be undesirable. In weight measurements, for example, excessive overweight or underweight is considered detrimental to health at any age. On the other hand, on the "mental age" scale, those who fall in the upper half have more potential for achievement; those on the left of the curve have more limited ability in mental activities.

Individuality in the biological area
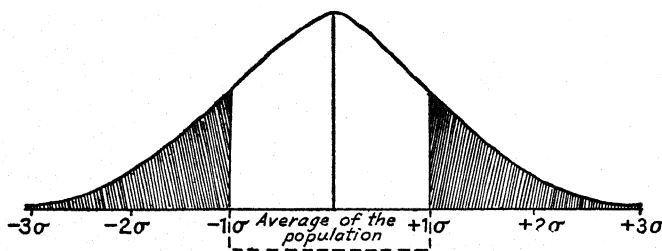
FIGURE 3. Normal probability curve. Range within which the great mass of "normal" people lie. Shaded areas represent extremes in either direction.
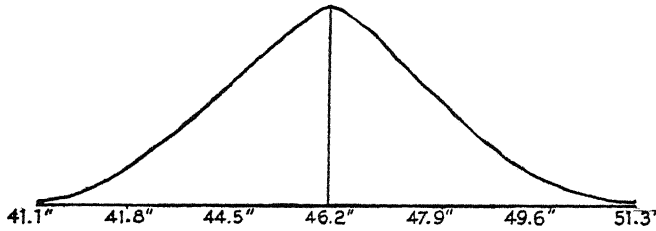
FIGURE 4. Normal probability curve of height for 6 year old boys. (Average and standard deviation taken from Simmons, K., and Todd, T. W.: "Growth of Well Children: Analysis of Stature and Weight, 3 months to 13 years." *Growth*, 2. No. 2.)

goes beyond height and weight. All children have the same organs, the same body constituents, the same functions but in all instances differ to some degree in both structure and functioning of these organs. Williams (1956) quotes from available data in the literature to show these differences. For example, differences in the width of the esophagus make for differences among individuals in the ability to swallow pills or to bolt food. Because stomachs vary in capacity, individuals can be expected to vary in their eating habits. It can be said that manual skills are both born and made. Thus, children's interactions with their environment are dependent in part upon their biological characteristics.

Some children also differ in their rate of development, going through the sequential steps as expected but at a slower or faster rate than average children. Thus there are *slow growers* and *fast growers* (Figs. 5 and 6). The period of adolescence initiated by the beginning of puberal changes illustrates these differences dramatically. Stolz and Stolz (1951) give a range of at least five and one-half years in the chronologic age at which adolescence began for the boys in the California Adolescent Study and at least four and one-half years at which it ended:

"Thus one boy may be entering adolescence at age ten years while he is in the high fifth grade, while for an age peer classmate childhood may continue until he is fifteen and a half years old and in the low eleventh grade." (p. 423.)

In addition to differences in the rate of growth, children may differ in the pattern of growth. Growth may show consistent progress; it may, however, have slow and fast periods. Some children may be slow in getting started; others may fail to keep their early pace.

There are also definite *differences between boys and girls.* Figure 7, representing growth in weight of boys and girls from 3 months to 17 years, shows that boys generally exceed girls in weight in the early years and after 14 years of age. In the early school years they are somewhat similar in weight, but between 9 and 14 years girls, because they mature earlier than boys and therefore pass through the puberal spurt of growth earlier than boys, are temporarily heavier than boys.

There seems to be very little difference between boys and girls in general intellectual capacity, but there are certain definite differences in interests and behavior, as we shall see later. Whether these differences in interests and behavior are innate or a product of the way we rear children is not clear, but much depends upon which interest or which trait is under discussion.

Goodenough and Maurer (1942), after a comparison of a number of types of tests of preschool children and test
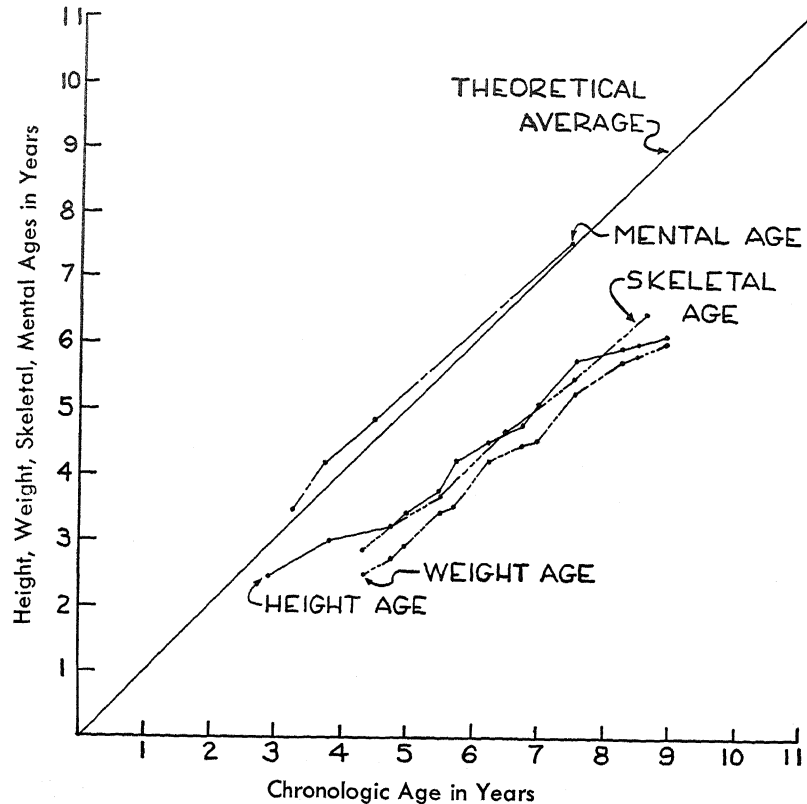
FIGURE 5. Growth curves of a physically slow-growing but intellectually average-growing boy.

performances at later years, found that in nearly all instances girls' scores showed a more consistent correlation between early and later tests than boys' scores. Girls show a reliable tendency toward greater stabilization of performance on tests than boys in the early years. They discuss this by saying:

> "Although it is possible that sex difference represents an earlier stabilization of mental level in females than in males it is probably more reasonable to assume that better cooperation and greater docility in the test situations—characteristics in which a number of girls are likely to exceed boys—provide sufficient explanation for the differences found. Nevertheless, the other possibility is by no means excluded. Because of the theoretical significance of the problem further investigation is desirable."

We must understand these unique aspects of each individual child's growth if we are to treat children intelligently. A tall, slender child does not put on weight at the same rate, nor does he weigh as much for his height, as does a stocky child. Some parents create unnecessary feeding problems in their attempt to achieve "standard" weight gains. Certain intellectually fast-growing children have the physical stamina and social maturity to enter school at 5½ years of age. Other children of the same chronological and mental ages will be quite unable physically or socially to stand the competition of other first graders. Forcing the pace of growth at any stage will not produce good results in the long run
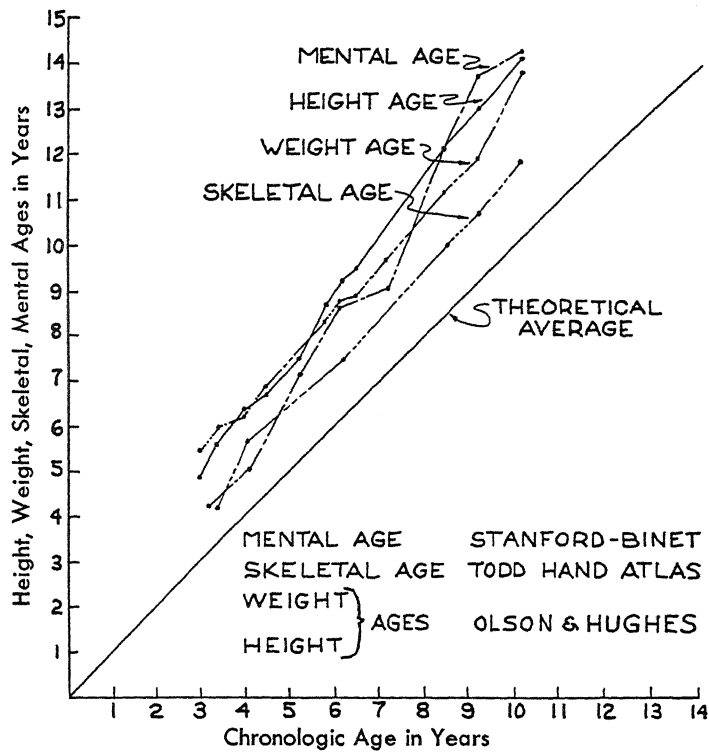
FIGURE 6. Growth curves of a fast-growing boy.
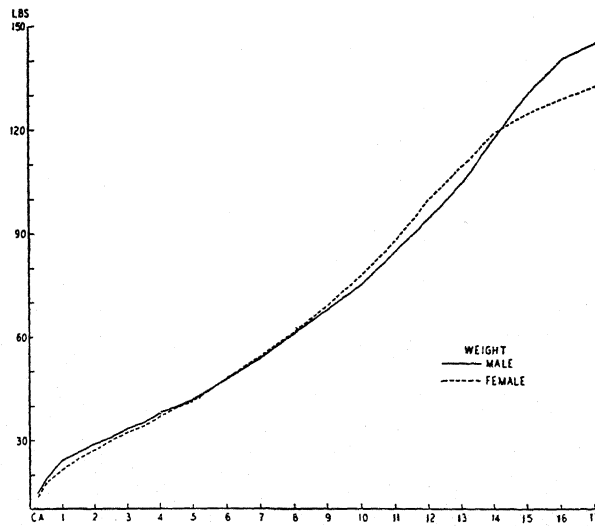
FIGURE 7. Curves showing the growth in weight of boys and girls from 3 months to 17 years. From Brush Regular Series. (Simmons, K.: The Brush Foundation Study of Child Growth and Development. II. Physical Growth and Development. Monogr. 9 (1). Washington, D.C., Society for Research in Child Development, National Research Council, 1944.) Comparable patterns maintain currently (Greulich and Pyle, 1959).

and may incur serious damage along the way. Forcing children into any pattern of growth which is not in harmony with their natural potentialities is likely to result in tragedy both for the child and for the misguided adult. Fathers, for example, should not try to make "go-getters" out of sensitive artistic boys; nor should Susie be compelled to try to make Phi Beta Kappa because her older sister did.

Interrelatedness. It has been said earlier that the child can be viewed as an open system with interaction between the various subsystems or aspects of development and between the individual and his environment. Thus, all parts of the individual can be studied as integral parts or as separate parts of a whole that bear relationships varying in degree, kind and quality. If this is true one would expect, for example, a closer and different kind of relationship between cognition and the development of the structure and physiology of the nervous system than between cognition and height and weight.

INTERRELATION OF ASPECTS OF DEVELOPMENT

The Wholeness of Development. The child develops as a whole being—physically, intellectually, and socially; he is a product of his family history, his personal history, his current satisfactions and strains. One needs to see each specific act of behavior in terms of the whole organism made up of a number of systems which function at varying degrees of autonomy and interrelatedness (Sigel, 1956). The interaction of these factors can be seen in Figure 8.

Interaction of Forces. The forces that operate in the child and in his environment and that contribute in different degrees, in different proportions and in different combinations can be said to be physical, intellectual, emotional, social, cultural and economic. The kind of body, its abilities, how it reacts and grows, the family and home, the community in which the family lives, with its population, its institutions, its attitudes, its standards and values, all react in a dynamic way to influence the developmental pattern of a particular child. There are an infinite number of ways in which these forces combine. It is, therefore, often difficult to find relationships because of this complexity. It is possible for the same behavior to stem from different conditions. For example, a child who spends a great deal of time away from home may do so because he has acquired a certain degree of independence or he may do so because he is looking for satisfaction of needs unfulfilled in the home. Physical maturity may be a factor in some instances and not in others. When association of factors does occur it need not necessarily indicate causality. It is with this caution that we approach the discussion of some areas of relatedness.

Physical Bases for Behavior. The most obvious interrelationships are those of the structures and functions of the body on the one hand and the behavior or intellect of the individual on the other, such as the nervous system and intelligence. For example, children from kindergarten through the ninth grade and a group of college women were given psychological tests after pre-experimental determinations of blood plasma ascorbic acid concentration. The results indicated that nutritional factors may play a more important role in mental test behavior than has previously been assumed (Kubala et al., 1960). Chemical substances produced in the processes of metabolism, hormones, and certain drugs appear to play a role in controlling and modifying the attributes of mind and body (Jensen, 1958). One
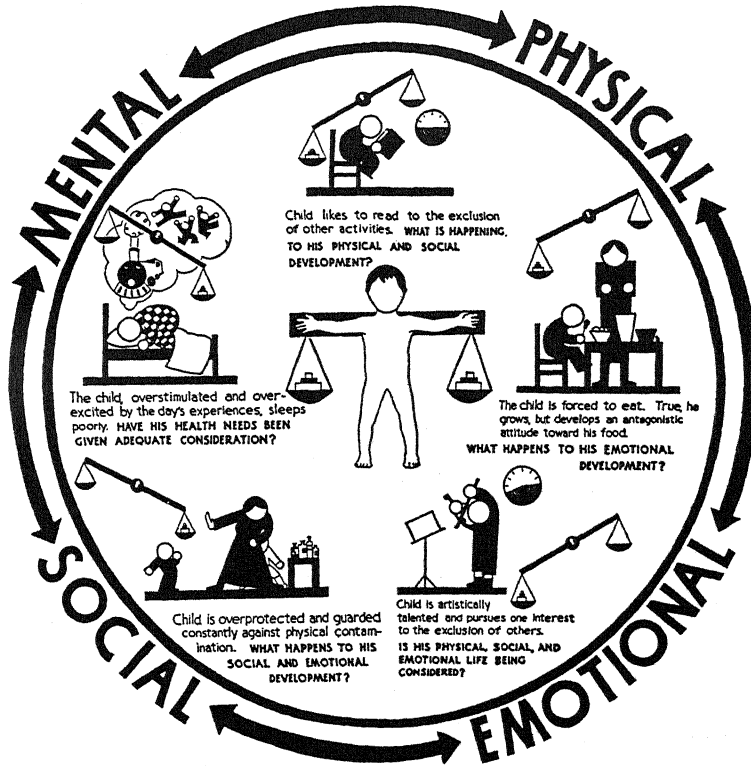
FIGURE 8. The interrelatedness of a child's life.

thesis has been developed which states that many of the classical oedipal conflicts may be traced to the biological development of the child, and to the parent's reaction to that development as well as to the traditional psychoanalytic bases (Maudler, 1963).

A study of the relationship of struggle and growth superiority to scholastic achievement revealed a consistent tendency for high scores on strength and growth to be associated with high scholastic achievement (Clark and Jarmen, 1961). Mentally retarded children have been found to be retarded in motor performance as well (Francis and Rarick, 1959).

Cowell (1962), on the other hand, found that the relationship between behavioral measurements and anatomical measurements in neonates is insignificant. He adds that this lack of significance is in line with the earlier findings of Bayley (1940), and Jones (1939), who showed generally low but positive correlations.

A physical basis for behavior is also demonstrated when a body structure or function is disturbed either through injury to an organ or through a disturbance in metabolism. An example of the former is a birth injury which affects behavior; an example of the latter is phenylketonuria, an inborn error of metabolism of an amino acid which limits mental ability, as we shall see in Chapter 2. There are also physical defects or diseases which indirectly may affect the behavior and feelings of a child because of the limitations placed upon him, or because of consequential attitudes toward him of adults or peers.

Since the child is a growing organ-

ism and his body is constantly changing, the timing of a physical insult may be a determining factor in the effect of the injury. Penfield (1953) gives as an example a child who, shortly after beginning to speak, suffers an injury to the left hemisphere of the cerebrum. He may become dumb for as long as a year. Then he begins to utilize homologous areas in the cortex of the right hemisphere. An older child might also do this, but with increasing difficulty. Adults would have even less chance of learning to speak, read and write again. The plasticity of early years tends to disappear later.

As the child grows, his pattern of growth and his rate of growth in physical development may be a contributing factor to his social development and to his affective life. This will be discussed later.

It can be said that the "biology of growth is not necessarily basic in the development of psychosocial behavior, but it is certainly a conditioning factor and may be a determining factor (Krogman, 1955).

Physical and Mental Growth. The relationship between physical growth and mental growth has generally been measured by correlating growth in height, weight and skeletal maturation with mental test scores. These correlations are generally low but positive.

Terman's Studies of Genius is widely accepted as evidence of the correlation of physical and personal traits. He studied a thousand children whose IQs were 140 or over and reports that gifted children are, as a group, physically superior to the various groups used as a comparison (Terman and Ogden, 1955). Studies at the University School of the University of Michigan also show that most intellectually gifted children (85 per cent) grow in a unified manner (Ketcham, 1957). Thus, there appears to be a tendency toward correlation rather than compensation. The child who is inferior intellectually seems to be slightly inferior all the way around. The intellectually superior (as contrasted to gifted) child seems to be at least slightly superior also in physical capacity (Terman, 1959).

There is some evidence that in the wide range of so-called normal children there is a small, but persistent, relationship between socioeconomic status and physical and intellectual factors (Martin and Stendler, 1959).

However, when physical and mental growth are compared according to their *pattern* of growth, the picture is different. Sontag, Baker and Nelson (1958) compared the per cent of mature height achieved at ages 2, 4 and 6 years, at every 2-year interval up to 20, with the per cent of mature intelligence scores achieved at each of the same ages (Fig. 9). They found that while the more intelligent children in the group tended to be larger and physically more mature at each age level than were the less intelligent children, the mental and physical rates of development of each child did not parallel each other in quite the same way. The children who were slower in physical maturation tended to approach their adult level of intelligence sooner, which may indicate a tendency for the less able children to be slower in physical maturation and to attain at a relatively young age most of whatever intellectual development they might achieve. Figure 9 shows also that periods of rapid and slow growth in physique and intelligence do not coincide but seem to alternate.

Intelligence accelerates rapidly up to 5 or 6 years of age, with another short spurt between 9 and 11 years. Height, however, is gained most rapidly during the first year, increases at a slower rate until 8 or 10 years, with spurts between 10 and 12 years in girls and 11 and 15 years in boys.

In the Fels Study (Sontag et al., 1958) mental growth rate was investigated by studying changes in IQ from 4½ to 6 years. This study showed no
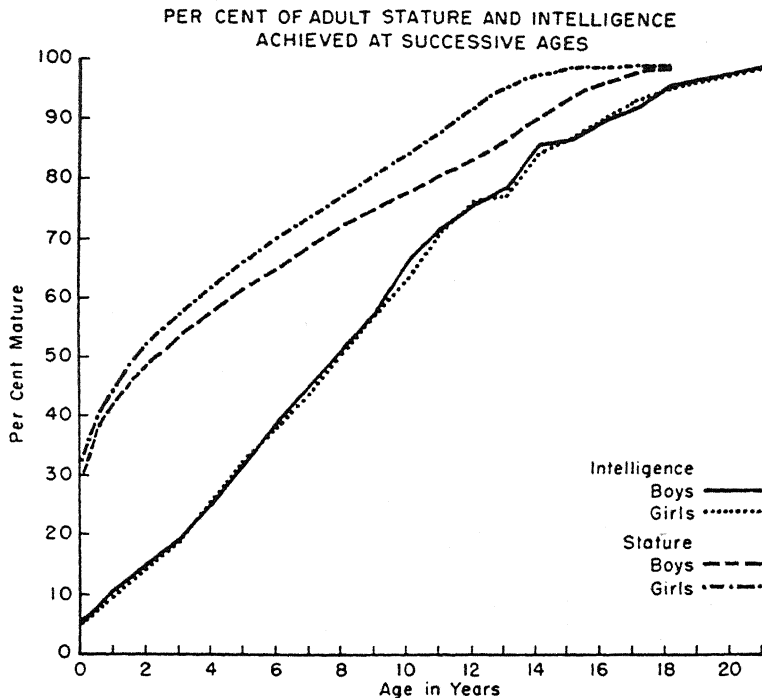
FIGURE 9. A comparison of growth in stature and intelligence when both are expressed as fractions of mature status. (Bayley, N.: Individual patterns of development, Child Development, 27:45-74, 1956.)

relationship between growth rate and IQ during these years.

It has been stated before that certain forms of physical defects are accompanied by mental defect. Jones (1954), in summarizing the literature on the subject of the relation of physical defects to intelligence level, concluded that there is some association between physical and mental handicaps.

To summarize, it can be said that the relationship between physical and mental growth is very complex. For the great majority of children physical factors may play a role in their mental growth, depending upon complex circumstances and situations in individual cases. Sontag, Baker and Nelson (1958) state:

"In some of our cases illness or retarded physical growth seemed particularly meaningful in the mother's encouragement of an emotional dependency relationship with the child. In other case, spurts in physical growth appeared to be accompanied by increased curiosity in new situations and by increased self-confidence." (p. 131.)

Certainly, the manner in which intelligence functions, being dependent upon attentiveness, concentration, self-confidence and aggressive attack upon problems, is unquestionably related to physical well-being.

Effects of Emotional Well-being. The relationships between emotional well-being and other areas of growth are positive and high. In Chapter 3, and in many places throughout the book, convincing evidence will be given to show that the child's physical well-being affects and is affected by his emotional well-being, that his social development and his emotional development are closely related, and

also that the child's ability to use his intelligence effectively is deeply influenced by the state of his emotional well-being.

Scholastic Achievement. Because of all the possible relationships discussed above, it is evident that the many aspects of growth, and not just mental growth alone, contribute to achievement in school. Readiness for school depends upon the physical, mental, social and emotional development of the child. So, also, academic achievements depend not entirely upon mental age. A child is better judged on the basis of his "functional capacity" than solely on the results of a mental test. Olson and his coworkers (1959) arrive at this functional capacity by studying school achievement in relation to growth in general. They have analyzed school progress as measured by achievement tests (and computed as achievement age) in relation to various aspects of growth progress, such as height age, weight age, dental age, carpal age computed from x-rays of the hand and wrist, grip age measured by a dynamometer to test strength of grip, and mental age. They have found that reading age, or arithmetic age, or any subject matter age is not so closely correlated with mental age or any other single growth age as it is with a composite of the growth ages. This indicates, they believe, that educational achievement sticks more closely to the "center of gravity" of growth or "organismic age" than it does to mental age. Millard (1958) summarizes this by saying that the child's reading curve will naturally follow his maturity curves.

According to the Olson method, measurements are converted by the use of norms to ages and plotted against chronological age. The organismic age is the arithmetic average of as many of the ages (height, weight, dental, carpal or skeletal, grip, mental, reading, etc.) as are available. It is significant only if it includes a substantial number of the physical measurements, of which the skeletal age is of considerable importance. It is useful, in other words, only if it is made up of physical measurements as well as mental and achievement measurements. Social and personality "ages" would be an important contribution to these studies.

Olson's concept of organismic age has been rejected by certain writers (Bloomers et al., 1955) who conclude that there is no systematic tendency for a child advanced in mental age to be advanced also in weight age or dental age. Olson has recognized the small coefficients of correlation between physical and mental traits. Nevertheless, he has hypothesized that large differences in achievement are related to differences in physical traits, provided the extremes for the physical traits are used.

Ketcham (1957) has shown that children with IQs above 130 who attended the University School of the University of Michigan are advanced beyond their chronological age norms for all physical and achievement measures.

Solomon (1958) has shown the opposite trend for the same measures for mentally retarded boys of the endogenous type at the Wayne County Training School at Northville, Michigan.

Ketcham's study shows that physical and mental traits are interrelated in growing children when subjects at the general population extremes for mental traits are compared with attention to physical traits. Analysis of the longitudinal data in this study reveals that both physical and mental traits in growing children show a high degree of correspondence in their tendency to expand with increases in chronological age.

Whether the organismic concept proves to be useful or not does not detract from the fact that these studies

have made educators aware of the need for examining the child as a whole.

Interrelationships during Adolescent Changes. Early adolescence with its many developmental changes is a time in the child's life when the dynamic relationships in development are highlighted. These relationships are demonstrated in Moore's study (1955) of adolescents living in a typical midwestern community. Data on 16 boys and 17 girls at the ages of 11, 13, 14 and 16 years were collected. Items used for assessing physical maturity for girls were age of menarche, maximum gain in height, maximum gain in width of hips, and breast changes; for boys, pubic hair rating, age of maximum gain in height. Social data were obtained from interviews, anecdotal records and reports of participation in the school and community, sociometric scales, and ratings made at clinical case conferences. Categories of warmth, participation, dominance, social activity and emotional activity were used to indicate the extent and quality of social interaction. Projective techniques, interviews, anecdotal material, observations, essays written by the subjects, and conference ratings on the emotional level of development at 16 years gave psychological data of the nature to reveal emotions, attitudes and feelings.

Physical, emotional and social aspects of development were correlated, and agreement between them was higher for girls than for boys. For girls, the relatively sudden physical changes were accompanied by abrupt changes in emotional life and in the pattern of social behavior. We shall discuss this in more detail in Chapter 14. Puberty is usually a more gradual affair for boys. They, therefore, have more time to adjust their middle childhood feelings and outlooks to the new impulses that are as strong or stronger than those of the girl. Both boys and girls eventually learn to give their sexual feelings expression in a manner acceptable to society (Moore, 1955).

Emotional development, according to this study, seems to be a critical area for producing all-around "successful" development at and following puberty. Boys and girls differ in the mode of expression of inner attitudes and feelings. Moore states, "It appears that emotionality in girls is channeled into concern with the formal aspects of behavior. There is more of a tendency for boys to be expressive of emotional factors through the feeling tone of their social relationships than there is for girls." However, at 16 years of age the boys in this study were still denying themselves the expression of affectivity or warm feelings toward girls. For both boys and girls there was a sharp constriction of emotions at puberty.

Moore found discordant as well as concordant patterns among the adolescents studied. Some were advanced in social success and emotional maturity but lagged behind in physical maturity. For one young person emotional readiness for mature living and physical maturity were not sufficient to provide for satisfactory social interaction. Social interaction without emotional maturity appeared to stultify in yet another. No one who was both physically and emotionally immature was ranked high in social development.

EFFECT OF TIME OF MATURATION. "What 'growing up' connotes for the individual adolescent depends upon a complex of physical and psychological factors. One of the most important of these is the rate of physical maturation. Adolescent growth may be relatively regular and even, or it may be uneven or abrupt" (Jones and Mussen, 1958).

Girls mature earlier than boys. Within each sex there will be those who are late in maturing and others who mature early. Children who are extreme deviates may find this period

a very trying one unless understanding adults come to their aid.

For a boy, early maturing may be an asset since with it generally come the prestige of improved athletic ability and the signs of approaching manhood. Boys who mature early have higher mean scores on physical and motor tests than do those who mature at the average age or boys who are late in maturing at the same chronological age (Clark and Degutis, 1962). Early maturing may come at a difficult time as, for example, during a period of family crisis or of a change in school when adult support is lacking. It may follow an inappropriate pattern so that a boy is unable to achieve a high degree of self-acceptance. How an early maturer will emerge in terms of satisfaction with himself and his life depends upon the interplay of forces within and outside himself.

In the California Adolescent Growth Study taller, early-maturing boys and shorter, late-maturing girls tended to have an easier time than their opposites (McFarlane, 1958). The social disadvantages of the late-maturing boys, but not of the early-maturing girls, were reflected in TAT (Thematic Apperception Test) scores at 17 years of age. Few striking differences in TAT scores between early and late-maturing girls were found at that time. Discrepancies between the observational reports and TAT scores of the girls may be due to differences in the age at which the data were collected. Observations were made over a period of time from 11 to 17 years; the TAT was given at 17 years, quite some time after the early-maturing girls had experienced their biologic maturating.

For the girl, early maturing may create a hazard to her social adjustment. An early-maturing girl is taller than her age peers and has acquired the figure of a woman. She, therefore, may feel conspicuous, a feeling which may become accentuated if her breasts are especially large. Most boys of her chronological age are shorter and lack the interest in girls that she has in boys. Tallness creates a problem for her at parties when partners pair off for dancing. She can accept this with better grace if she is given some assurance that this condition is temporary. An explanation of her growth pattern usually allays her anxiety about whether she will always be so tall in relation to others. Also, her attitude toward growing up will influence her feelings about herself and her growth. If she accepts growing up, she will welcome changes indicating growth; if unwilling, she will resent them.

On the other hand, late maturing may create concern for both sexes, but it is more acute in boys. They find themselves underdeveloped youngsters in the midst of well-developed classmates. They are short in height, less capable in physical ability and late in acquiring characteristics of masculinity. Their anxiety about their size is intensified because of the realization that some of their peers have completed their growth. Hence, they assume that the age when growth ceases is imminent.

Early and later maturers may exhibit psychological differences. Studies of early- and late-maturing boys have demonstrated differences in behavior, feelings and motivation. In these studies, early-maturing boys were judged during the adolescent years as physically more attractive, more matter-of-fact and more relaxed; the late maturers were judged as more eager, animated, uninhibited, active and tense. At 33 years, in a follow-up of twenty of these same boys, physical differences had disappeared, but those who had matured early were still making a better impression, were more dominant, responsible and less impulsive, but also were less flexible than the later maturers (Mussen and Jones, 1957).

On the basis of fantasy themes, the late-maturing boys at adolescence were more likely to have feelings of personal inadequacy, strong feelings of rejection and domination by others, prolonged dependency needs and rebellious attitudes toward their parents, whereas the early-maturing boys were more likely to be self-confident, independent and more capable of playing a mature role in their social relationships. The groups did not differ in their needs for achievement and recognition. The late maturers also had stronger drives for social ties and social acceptance and for aggression than did the early maturers. No difference in drives for recognition, control and escape were found between the groups. The early maturers at adolescence produced more student body presidents and more athletes. At 33 years of age, of the 11 early-maturing boys, 4 filled important managerial positions while none of the 9 late-maturing boys did so.

In a parallel study of adolescent girls at 17 years of age, differences between early and late maturers were not striking but were, for the most part, similar in direction to those of the boys (Jones, 1958). Thus the late-maturing adolescents of both sexes when observed at 17 years tended to be characterized by less adequate self-concepts, slightly poorer parent-child relationships and some tendency toward stronger needs for dependency.

It is evident from these studies that differences in the rate of maturing are important factors during the adolescent years in determining behavior and psychological security. Some of these differences may carry over into later years, depending upon other factors in the individual's life. For boys, as for girls, an explanation of their pattern in physical growth, a demonstration that other boys are having a similar experience, and some friendly counseling about ways in which they may hold their own among their contemporaries will help them to adjust to their differences.

Freedom to grow at one's own pace should be the right of every child. Early-maturing children may suffer, especially in an environment where an expanding social life and growing independence are restricted. The ensuing conflict between internal desires and environmental restrictions may find an outlet in various ways, either through behavior or some physiological indication of emotional tension.

Personal and Social Adjustments. What happens to children as they grow and are faced with the cultural pressures of society, especially the expectations of their parents, teachers and peers, is reflected in their social adjustment. Each child has both assets and liabilities. For some, the assets predominate; for others, the liabilities tend to conceal the assets. The same liability may be a mountain for one child and a molehill for another. The unimportant at one age may become a subject for concern at another. A manifest concern may be real or it may be a rationalization or a projection of a deep emotional conflict that the child cannot express.

It can be said that the growing child is a "biological slate" on which his experiences are registered. This slate may be insufficient for him to be able to utilize advantageously certain experiences common to children of his given chronological age. Thus, a hazard to a happy life is produced. He may, for example, like the late maturer, be small in stature and relatively immature in development, giving the general appearance of being young for his years. Physical limitations may restrict achievements. Desires and ambitions may far exceed physical capacity. In measuring himself against his peers he may find himself uncomfortably different.

Masculinity has a high value for boys in this society. The steady and punctual development of the masculine physique in teen-agers is extremely important to a boy, to his peers and to his family. During the teen years an inadequate masculine physique, or a distorted concept of what constitutes normal development in early adolescence, may produce concern and thus influence a boy's behavior. Schonfeld (1950), in a study of boys from 9 years on, reports that, generally, the boys were disturbed when their puberal development was slow. In some cases, shortness, the size of penis or testes, hair distribution and muscular development were areas of concern. In other cases, the concern centered around physical characteristics that had always been present but had acquired an increased significance because of the boys' age. The expression in behavior of these anxieties differed among the boys. One 14 year old withdrew from ordinary social contacts. Another boy of the same age, because of sexual immaturity, was aggressive, hostile, destructive, domineering at home, a truant from school and a petty thief. Unable to command respect and obedience from other boys, he organized a local gang and barely missed getting into really serious difficulties. Not all boys appeared disturbed about their masculinity. It was suggested that this lack of conscious concern might be due to a compensatory psychological mechanism or to a lack of development in certain earlier stages. Parents, teachers and playmates contribute to teen-agers' concern about "growing-up" through encouraging boys to take pride in masculine development.

Relation of Behavior Problems to Growth. Growth itself can create certain situations that lead to behavior problems. Such problems are sometimes referred to as normal behavior problems since they occur in many children at specific stages of growth. They are often associated with imbalances in growth in the various areas as, for example, when the young child's curiosity outruns his motor ability to handle many of the objects he attempts to explore. In such instances the "area of lag" soon catches up and the problem disappears. Macfarlane, Allen and Honzik (1954) studied the incidence of problems reported by mothers. Many problems were repeated so frequently at one age that they could be considered normal occurrence in the developmental process. For example, a group of problems consisting of restless sleep, disturbing dreams, physical timidity, irritability and attention-demanding appeared usually during the preschool years and again in adolescence. Overdependence, somberness, jealousy and, in boys, food finickiness had peaks on entering school and in early adolescence.

Deviations from the "average" may also be associated with problem behavior. Children who have patterns of fast, of slow or of irregular growth, for example, often present school problems. A. S., a girl (Fig. 10), is a case of this kind. At 8 years and 5 months, A.S. was as tall as the average 10 year, 10 month old girl, as heavy as the average 9 year, 11 month old and had a mental age of 12 years, 2 months. In 1 year and 3 months she had gained 3¼ inches and 10⅛ pounds. Her feet had grown so rapidly that she wore an adult size 6 shoe at the end of the year, in contrast to a size 13 (children's size) at the beginning. During the year she had complained of being tired and it had been necessary for her to miss about two days of school each month in order to relieve this fatigue. In addition, a certain degree of restlessness was indicative of fatigue. This was noticed when she visited the Child Development Laboratory for her yearly measurements of growth. At that time she seemed unable to sit or stand quietly.
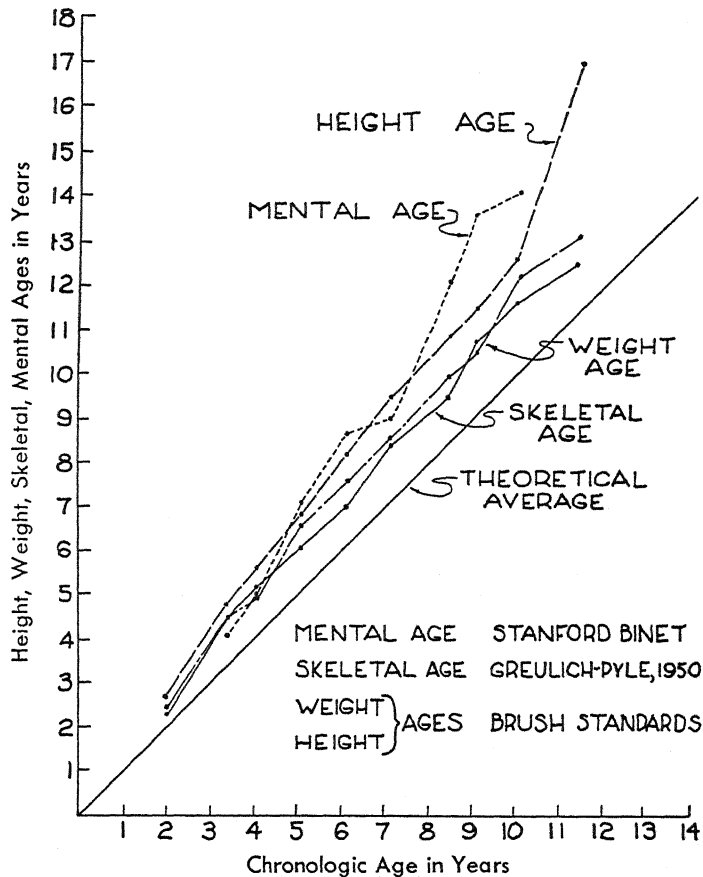
FIGURE 10. Growth curves of A.S.

In school she was reported by her teacher as a disciplinary problem and lacking in initiative. The conflict between teacher and child was alleviated when her seat and desk were adjusted to her size. It had been necessary for the child to place her feet in the aisle in order to have any degree of comfort. With the adjustment of the chair and desk, she became more comfortable with the result that her behavior improved. Out of school, she generally selected children of her own size as playmates, which meant she was playing with children 2 to 4 years older than herself. When the pressure of keeping up with children 2 years or more older became too great, she selected children of her own chronological age. Thus she had two sets of playmates which she alternated according to her immediate needs, playing with the older children when rested, with the younger ones when tired. In this way, she had solved her own problem of play but, of course, could not solve her own problem in school.

Such a child illustrates the fact that children use their energy for two purposes: (1) for activity, or the daily program of work and play, and (2) for growth. When energy is being utilized rapidly for growth, there is less for activity, and the child shows signs of fatigue which are relieved only when

adequate change is made in his schedule to relieve him temporarily of some of the demands which he is, at other times in his life, able to meet. We see in the case of A.S. also that the inability of elementary school children to sit still for long periods is, in part, a by-product of rapid growth of the larger muscles, complicated by slowness of learning to inhibit movement.

Another so-called problem of this period of growth is adolescent awkwardness, which appears probably, in part, because of rapid physical growth; in part, because of the physiological instabilities (organic imbalances) of adolescence; and, in part, because of rapidly developing social self-consciousness. Adults are not always helpful to children at these times, usually because of lack of understanding of what is happening within the child.

The Problem of Obesity. Obese children are almost without exception not the happy-go-lucky individuals that the world tends to associate with overweight. They may become timid and retiring, clumsy and slow. They are often oversensitive and tend to avoid healthy play and exercise because other children make fun of them.

In some instances, fearfulness and lack of interest precede rather than follow obesity. In this case, obesity may be part of a constellation of traits that portray a child who is immature socially and emotionally yet is advanced physically, including both bodily size and physical maturation, and has good intelligence. In order to understand him it is necessary to investigate his family, for it is here that we find some valuable clues. The obese child, in the Bruch studies (1940), typically lived in an overprotective and oversolicitous environment, generally with a dominating mother and a weak and submissive father. The oversolicitude and protection of the mother could not hide her underlying insecurity, possessiveness and, often, hostility to the child. These inner feelings were reflected in her behavior. The home, therefore, did not fulfill the child's basic needs of being loved and accepted for himself and having opportunities for development along his natural channels. As a consequence, he resorted to eating as a substitute gratification.

Some children may overeat and become obese because eating provides comfort in a time of stress, perhaps when there is difficulty in establishing friendships with peers in preadolescence, in making a place for themselves in a new community, in maintaining their position in school or when disruptions occur in the family.

Subcutaneous fat for some boys during early adolescence may be disturbing since their body configuration does not conform to their masculine aspirations. A boy may be fearful that he will never become a real man. A wise adult can give needed support to a boy during such a period.

That obesity has a number of contributing factors which operate in varying degrees and combinations is pointed out by Lourie (1957), who gives three aspects to the obesity problem, namely, (1) constitutional (genetic and structural) (2) psychological (values of food and of obesity to the person) and (3) cultural and social reactions to food and to being fat. Physical activity can contribute to weight control (Stunkard and Pestka, 1962).

Adults can be of assistance to obese children not only by helping them to regulate their diet but also by making sure that their home, school and social life is as happy and satisfying as possible. Such children can be guided into activities compatible with their physical health and vigor, activities in which they can achieve a definite degree of success and, therefore, satisfaction. Boys in early adolescence can

be reassured that their obesity will not interfere with their maturation. Boys and girls who become obese before early adolescence tend to be accelerated in height and bone maturation. Early puberal development is the rule for obese girls and not unusual for obese boys. There is a somewhat earlier appearance of pubic and axillary hair in obese boys and girls and earlier menarche in girls (Wolff, 1955).

APPLICATIONS OF THE WHOLE-CHILD CONCEPT

For Doctors, Nurses, Nutritionists and Dentists. For those who work primarily with children's bodies, the chief application of the whole-child concept would lie in the recognition by these workers that children have personalities as well as bodies, that, as workers, they are protectors of the mental as well as the physical health of the child. This means an understanding of the behavior of the growing child and the forces behind this behavior (Holden, 1962). There is frequently a strong emotional component in the situations in which the doctor, nurse or dentist meets the child. Such situations as accidents, illness, hospitalization and dental care can be frightening. Experiences that threaten his trust of adults enhance his fears and encourage antagonism, interfere with the necessary treatment, provide the basis for lasting impressions, and affect subsequent relations with such professional people. Thus, preparing the child by telling him in a manner which he can understand what is wrong, explaining what is to be done and how it will feel, often leads to cooperation and alleviation of some of the fear.

Knowledge of child development can afford an understanding of what healthy, normal children are like physically, mentally and emotionally. Such knowledge aids in the diagnosis and treatment of sick children. It is essential for counseling parents in the rearing of their children and later in counseling the children themselves. Physicians and specialists in physical growth can be helpful, for example, to an adolescent who is concerned about himself and the development of his body.

As adviser and counselor, the specialist in physical growth needs to have information about children's sleeping, eating and play routines at the various ages. If he knows what to expect of children and how their behavior develops, he is in a position to guide the parents. He may be assisted in this guidance by others working with the family, namely, the teacher, and child and family agency workers.

In Social Work and Guidance. The clinical psychologist, the social worker or guidance counselor meets children at critical periods, when their homes are being broken up, when illness, death or other dramatic circumstances have entered their lives. The children are frightened, bewildered or otherwise emotionally disturbed. Wise treatment at such times may make all the difference between a serious emotional disturbance on the one hand and a satisfactory emotional adjustment with accompanying physical well-being on the other.

The social worker needs a knowledge of children's physical growth and their physical needs so that this knowledge can be brought to bear on the problems at hand. Many attitudes and reactions of children, particularly when they are faced with an emergency or crisis situation, are reflections of current or past physical conditions. A knowledge of physical development as well as the psychological aspects of development assures sound judgments in making provisions for children.

Just as the physician needs to know well children, so, too, the psychologist or social worker needs to know healthy, normal children and families. Although the nature of the work of a psychologist or social worker necessitates concentration on the abnormal or disturbed aspects of children and families, knowledge of normal growth and sound family life serves as a good foundation for counseling. As stated earlier, behavior problems of children may be aspects of healthy growth, such as the negativism of 2 to 3 year old children, the aggressive boisterousness of 8 to 10 year olds, the "stealing" of the 6 to 10 year old. The worker differentiates between problems that are a part of a passing phase of development and those that have deep psychological roots and thus need specialized attention.

For Schools and Teachers. In the school situation the dynamic relationships between the growing child and an environment planned for a specific purpose, that of learning, are well demonstrated. The bright child and the dull child, the timid and the confident, the eager and the bored, the frail and the sturdy meet in the school, which should provide sufficient flexibility to give each student an opportunity to develop his potential. The necessity of meeting the children's needs on the one hand and the demands of the school on the other hand require a mutual adjustment, the child to the school and the school to the child. This can be done when the school program is planned with the needs of children and their development in mind. It also requires an understanding between the school and the citizens of the community as to the aims of school and the way they can be achieved. In addition, there is the recognition that the child comes from a specific family with its own standards and values and that this family belongs to the community of which the school is a part. This community, in turn, is a part of a larger cultural environment. Just as there is give and take between the school and the child, there is also a necessary give and take between the school and the parents.

The concept of readiness for entering school and for progression on the basis that a particular school uses in its program needs to be broad enough to encompass the basic concepts of growth as well as the needs of society. Brenner (1957) says:

> "A well conceived concept of readiness helps to develop in parents, teachers and in the public an understanding attitude for variation among individual children, for the different impacts of culture and subculture on them and for their particular patterns of growth and readiness. It helps them to see the necessity of having each child at his proper level and to further his development according to his readiness; the slow grower, the fast grower, the gifted child, the retarded child, the handicapped child, the "normal" child, the child who is successful and the one who fails to be promoted." (p. 131.)

The preparation of the teacher and the administrator begins in the years of teacher training. Here the student learns about child development as well as the subjects to be taught. Here he learns about the concept of the "whole child." How the basic principles are carried out later in the teaching situation depends upon the situation and the creativity of the teachers. Various devices to adjust school programs to the growth needs of individual children have been used, including academic "enrichment" for the more advanced, rearranging of groups in the day's schedule to permit children to meet with their peers in the various academic and social activities, conducting classroom teaching in a way which makes it possible for each child to function on his own level (Cruickshank, 1959).

FIGURE 11. A student learns about children while working with them in the craft room at camp.

UTILIZATION OF THE PRINCIPLES OF GROWTH

Knowledge of Phases of Development. If we do not know something of stages of growth and growth patterns, we may find ourselves in trouble with our children because we expect too much of them. For example, many parents are distressed at the rough-and-tumble, boisterous behavior of children in the gang age. They fail to understand the child's need to stand up against the blunt, egocentric behavior of other children and to work out for himself a social adjustment to peers who love him less and hence who make fewer adjustments to him than his family does. Failing to understand that this adjustment takes time and comes through a sometimes crude trial and error process, the parents expect adult smoothness in personal relationships.

On the other hand, we may not expect enough of growing children and hence make too little provision for the development of whatever capacities they have. One pair of parents had done nothing to investigate the mental well-being of their child who, at 12 months, had made no attempts to sit up. This baby ate and slept well and gained length and weight at a satisfactory rate. The parents had so little understanding of the nonphysical factors of growth that they assumed all was well. Much could have been done to stimulate this baby's activity without forcing him had the parents known that he was slower in mental development than the average child and, therefore, that he needed special encouragement and special practice. This was a case of a slow grower whose development could have been facilitated. There is often the case of a gifted child whose talents stagnate in a

schoolroom which fails to challenge him. Many superior children become bored in the grades or even in high school, thus forming poor habits of study which prove a handicap in college.

Sometimes a high average ability is treated as a greater gift than it actually is, with the result that the child considers himself more superior than his capacities warrant. One set of parents, for example, were thrilled that their 2½ year old daughter could recite 159 nursery rhymes. They lost sight of the fact that many children of this age can be coached into such a stunt and, therefore, that its accomplishment did not necessarily indicate the genius they thought it did. They also failed to read the signs of high nervous tension which should have indicated to them that they were pushing their child beyond the natural limits of her mental growth and that they were purchasing a short-lived satisfaction for themselves at a serious cost to physical well-being and nervous stability for the child.

Some understanding of what can generally be expected from children at any given age is useful as a background if one can learn to use these standards as guides in judging the natural pace of one's own child. They are disastrous if used as whips with which to drive any given child beyond his own natural pace; yet they can be helpful in locating retardations of natural pace which might be corrected. Knowledge of standards should help us, in other words, to judge the pace of growth for any given child and should, therefore, keep us from forcing growth. This knowledge can help us to keep growth flowing at its own maximum natural speed.

Parents and teachers are sometimes greatly troubled because they fail to recognize a "passing phase" of growth which, though troublesome, evidences a desirable basic growth. This is an aspect of the "growth behavior problems" discussed earlier. One pair of parents of a 16 year old boy were ready to place him in a boarding school because, "if he keeps on being as increasingly hard to manage as he has been for the past six months we cannot handle him." They had no insight into the fact that the adolescent stage of development for most children is one of the most trying of all growth periods for the parents. As we shall see later, this period is one in which most children reach out rapidly for independence and, therefore, resist the authority of parents. They are still lacking some of the knowledge and experience needed to guide their actions, yet they refuse help from their parents. The parents of this particular boy did not understand this as a normal and usually short-lived period of growth. They could see only the complicated behavior situation which had arisen and could only suppose that the crescendo of difficulty in managing the boy would soon reach the stage where he would be completely out of hand. When they gained some insight into his needs and how to provide for them, they were able to restore at least a modicum of peace in their relationships with him and once more experience the joy in his development which is natural to parents who are not at loggerheads with their children.

Such misunderstanding of the processes of growth and the needs of the growing child often produces disharmony and strain between parents and children, or between teachers and students. As we have pointed out, many children are regarded as behavior problems when they are only passing through a quite natural phase of desirable growth. The behavior problem situation arises because the adult in control does not understand what is happening and, therefore, handles the situation badly.

Making the Most of Each Growth Stage. If we know something of the sequences of growth, we should be

able to provide experiences that help children to make the best of each phase and to prepare well for each ensuing phase. This means providing materials, companions, incentives and opportunities for expression appropriate to each stage of development. It means also giving the child encouragement through praise which recognizes a really good performance *for him, at his stage of growth,* but which avoids both the discouragement of insistence upon a standard of performance which is beyond him and the smugness which might result from praise too easily given for a mediocre effort and mediocre performance. The same holds true of the corrections which guide learning by pointing out errors of performance. Blaming a child for what he cannot help is discouraging to effort and optimal learning. Yet pointing out areas in which performance can be improved, especially if accompanied by suggestions on how to accomplish the improvement, can be most constructive if it leads the child in the direction of a desirable next step in growth.

Although children, if given a reasonably rich environment and a reasonably free opportunity to learn, will make their own next needs apparent and will take their own next steps in growth, it is helpful for the adult to know what these needs and steps are, not only in order to understand them but also to help to provide for them. In adolescence, for example, parents who have known since the child was a baby that eventually he must make his own decisions and carry his own responsibility, will gradually remove the control of their authority. This requires a nice understanding of physical and mental growth in order to remove control fast enough, yet not too fast. Removed too slowly the child must fight for independence and, unless completely cowed, will do so. Removed too rapidly, the child is left to make decisions and take responsibility for which he is not ready. In this case, the consequences of bad decisions may frighten him away from responsibility on the one hand; or, on the other hand, it may produce a drunken sense of knowing more than he actually does, which can lead him into brash decisions and real tragedy or, at best, into smugness of personality. Knowledge of "when is enough" of any opportunity or of any experience is basic to intelligent guidance of children at every stage of their growth.

METHODS FOR ACQUIRING KNOWLEDGE OF GROWTH PROCESSES

Historical Background. Until very recently, every primitive tribe has had its own code for rearing the new generation. The Chinese and Hindus have had patterns for child training which have endured through many centuries. As long as their society remained stable, family life proceeded in fairly constant patterns, requiring little change from one generation to the next, since each generation of adults met few new or unprepared-for situations. That basic needs of children are much the same the world over is illustrated in a Hindu publication (Mira, 1962) which states that the following are the fundamental needs of children: (1) good health, food and rest; (2) love of home and a sense of belonging outside as well as within the home; and (3) belief in oneself; success and accomplishment in at least one activity.

In Western countries the extremely rapid changes in manner of living and working which have come about since the Industrial Revolution have necessitated new adjustments with each generation of adults. And these changes have gradually spread to the most primitive areas of the globe (Whiting, 1963). Scientific research has added greatly to our knowledge

of people as well as of things. Not only has our economic world changed, our social world has changed as radically. This places rigorous demands upon both physical and psychological stamina. Adjustments have been so rapid that old, socially inherited patterns of family life and child rearing have not always worked. There is current need to learn as much as we can about how to preserve the best values of family life and how to insure optimal development of all potentialities possessed by everyone.

There are now many important centers for the study of family life and of child development. A number of outstanding colleges and universities offer advanced degrees in child development, family life and human relationships. Many communities have developed child health clinics, child guidance clinics and family consultation centers. As students who wish to deal intelligently with children and with family life, we should know at least a little of how this science proceeds.

Importance of Accurate Observation. Much can be learned about children through observation if a person has acquired the skill of observing. Through his appearance and behavior the child reveals much to a trained observer. However, observation alone is not enough for judging intelligence or for evaluating most behavior or for diagnosing most physical conditions. The color of the skin, for example, cannot be relied upon for detecting mild anemias. Just looking at a child gives us very little clue to the amount of weight he has gained in a given time or to his increase in height. The eye and the ear must be trained. Precision instruments to measure growth in size, change in structure and in efficiency of function are important aids to observation. Scales, measuring boards, calipers and tape measures can be used to detect changes in size. The observation of bone development is made possible by the use of the x-ray. Biochemical tests and various instruments are used to determine the status of body functions. Performance tests measure motor achievement. Batteries of intelligence tests form the basis for evaluating intelligence. Projective techniques are used to study emotional characteristics and adjustment. Sociometric techniques are used to study social development and behavior.

Cross Sectional and Longitudinal Methods of Study. There are two methods of studying growth, the cross sectional and the longitudinal. The cross sectional method involves the measuring or testing of different groups of children at different ages or stages of development. In such studies large groups are often used and results are expressed as averages for these groups. Many of the norms now used were collected in this way. Such norms as the mental abilities at various age levels, vocabulary, interests of the 6 year old, and height and weight are examples of this method of study. By the use of such norms, general trends can be determined. It thus becomes possible to determine what is generally expected of most children at a given age and, if the mean or average established is accompanied by the standard deviation or if the method of percentile ranking is used to determine how great is the difference among individuals.

On the other hand, the longitudinal method involves the measuring or testing and study of the same children through a number of years and, therefore, through each successive stage of growth. To collect norms in this way requires more time but it is a more reliable method for determining growth trends.

In addition to serving as another method of establishing norms, the longitudinal method can be used also

to study individual patterns of growth and speed of growth as the cross sectional method cannot (Kodlin, 1958). When a battery of tests and observations is repeated regularly, much can be learned about the dynamics of growth.

Many research centers studying child development* have used the longitudinal method, following the same children through periods of years. In doing this these centers have usually studied the growth of an individual child (1) by comparing his growth at any given moment with that of representative groups of children, that is, comparing him with appropriate norms; and (2) by following his individual progress through successive stages. The first way gives the status of the child at one point in his life; the second way reveals from whence he has come, in what direction, and at what speed, he is going. A judicious combination of status and progress evaluation is thus obtained.

Wise Use of Standards. One must remember, in using these norms, that such figures are only averages. It must be understood, for example, that approximately one-half of 6 year olds examined do better than, or are taller than, the figure given for "mental age" or for "height age" of 6 year olds; correspondingly, the same proportion do worse, or are shorter. Such standards, or average figures, have often been used unwisely. "Norms are not criteria for optimal development. They are statistics for basic comparisons" (Subrahmanyan, 1957). A norm is a descriptive statement; normality is an evaluative term implying a desirable or wholesome state. There has been a tendency among some workers and parents to check all children against a fixed figure regardless of individual differences and in complete disregard of the normal range of variation in growth.

It is important, too, in considering standards not only to consider the normal range of the population at large, but also to think of the normal range of the specific group in which the child finds himself growing up. We know, for example, that children are larger and that they mature earlier than in the past decades. Therefore, when norms for height and weight and maturity measures such as menarche or skeletal development are used, it is desirable to see that they are as recent norms as are available. Tanner (1962) has summarized the data from various countries.

Children also will differ in size according to their socioeconomic status and their ethnic group. Combining studies done in Canada and in U.S.A., 7 to 10 year old boys representing professional and managerial groups average 1 inch taller and 3 pounds heavier than those in the unskilled and semiskilled groups. Similar differences were found in boys attending public schools in the best and poorest districts (Meridith, 1951). Average Norwegians, for example, are 5 inches taller than average Japanese (Sebrill, 1953).

Unless this is understood a false sense of security or needless anxiety about the growth of a child may result from lack of consideration of these factors. We know, too, that boys and

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*Brush Foundation, Western Reserve University; Child Research Center, University of Illinois; Child Research Council, University of Colorado School of Medicine; Division of Maternal and Child Care, Harvard School of Public Health, Boston; Experimental School, University of Michigan; Fels Research Institute, Antioch College; Merrill-Palmer Institute, Detroit; Institute of Human Development, University of California; Institutes of Child Behavior and Development, University of Iowa; Institute of Child Development, University of Minnesota; Philadelphia Study for Research in Child Growth; Forsyth Dental Infirmary; University of Louisville School of Medicine; Halpenden Study in England and Studies in Europe and Africa under the auspices of the International Children's Center in Paris.

girls differ in height and weight and that girls are ahead of boys in bone maturation (see Chapter 7). Since the expected optimum of development differs from hereditary group to hereditary group and from one environmental circumstance to another, *one should always use standard figures in the light of full knowledge of their relevance to any given group of children or to any given child in that group.*

In the same way, mental age standards are useless in dealing with children whose opportunity to learn differs from the average opportunity, or whose emotional conflicts keep their intelligence from full functioning, unless full account is taken of these circumstances. A child handicapped in vision or other sense or crippled in body cannot be measured by scales standardized on normal children. Social development scales and standards also must be utilized only with a clear understanding of the group experiences available to the child or children being measured, to the ethics or moral standards of the families and neighborhoods in which the children live, and to other important factors which inevitably determine the stage and the pattern of growth possible for any given child at any given age. The normal range of any group in any measurement will differ according to hereditary and cultural background and for each environmental opportunity.

Further illustration may serve to clarify the need for care in interpreting any given child's standing in relation to standard tests and measurements. For example, acceleration on a language scale may not mean a special gift in language; it may mean only that the given child has been especially coached in language accomplishment or has been continuously exposed to an environment unusually rich in language usage. Ordinarily, in a case of this kind, the rich language environment would be provided by parents themselves especially endowed in language. A child of such parents may or may not have inherited a special ability. If he has, he will naturally benefit markedly from the superior language environment and will move forward in language more rapidly than most children. If he has not inherited the ability, he will benefit less from his rich language environment. However, one must be alert to the occasional child of only average native language ability who, because it is the thing to do in his family or because accomplishment in this field wins him special attention, concentrates unusually hard, learns more rapidly than he would without such incentives, and gives greater early promise than he can later fulfill. A precocious vocabulary in young children has sometimes led parents or teachers to predict and to expect great things in writing which the child as an adult could not produce. Although vocabulary correlates positively and highly with intelligence, it is also, in part, a reflection of environment.

On the other hand, retardations in vocabulary age have often been misunderstood as indicating lack of intellectual or at least verbal capacity, whereas in many public school children they may only mean that another language is being spoken at home and that the child has not had a normal opportunity to learn English. A child, lacking such opportunity, may, for example, at age 6 have an English vocabulary equal only to that of the average 4 year old. This does not necessarily mean that this child, now only two-thirds "developed" in vocabulary, will remain proportionately retarded throughout his growth period, having only an 8 year old vocabulary at 12 and so on. What one needs to watch in such children is the increment of progress, or increase in rate

of growth. *It is how fast the child learns, or grows, rather than where he is at the moment, that counts.* This child with a 4 year old's vocabulary at age 6 may grow in vocabulary 18 months in the next 12 so that at age 7 he measures 5½ in vocabulary age. Being still a year and one-half "retarded" in vocabulary, he will, nevertheless, have indicated accelerated growth and will probably shortly catch up with his chronological age. In fact, he may eventually prove to be gifted in language.

Consideration of Each Child's Unique Pattern for Growth. The practice in the past of simply examing the child at a given moment and matching him in a Procrustean fashion with the norms has lost ground. The emphasis on fitting the child to the expected mold is being replaced by that of letting the potentialities of the child unfold in an environment rich enough to meet his needs. Therefore, *where he is in his growth at the moment means little unless it is set in the framework of where he has been and in what direction he is going.* For example, a child might compare favorably with standards at the moment, yet actually be a superior child who has lost his impetus so that he is lagging in what should be *his* rate of growth. The fact that he has lost impetus may be of vital significance, and it is this fact with which we must deal, rather than with the fact that he is average for his age at the moment of measurement. Or again, a given 6 year old boy may be only as tall as the average standard of the 5 year olds of his ethnic and socioeconomic group, yet he may at the time be making a perfectly satisfactory height gain. Mature height for him, measured in terms of that of his two parents, may be below the averages of mature adults of his group. In other words, he is now and will continue to be a short person, and his apparent retardation in growth is not a retardation at all but represents optimal development for him.

Since children differ widely both in their pattern and pace of growth, our understanding of a so-called "normality" must widen. Thus a range of normality rather than a fixed average must be considered in evaluating any aspect of growth. This can be expressed in terms of the standard deviation, percentiles, or channels such as those used in the Wetzel Grid, a device for evaluating children's growth in height and weight. It is described in Chapter 7.

It is important, then, that schools and other agencies dealing with children develop devices for studying the wider background of children and for keeping cumulative records, so that studies of any given child at any given time may have the perspective lent by a knowledge of his background as well as of previous and present trends in his growth.

EXPERIENCES TO VITALIZE CLASSWORK

1. Discuss possible sources in your community for obtaining information about children.
   a. Will it be possible to visit public schools in your community:
      To visit classes, playground and other activities?
      To talk to teachers of given children?
      To gain access to school records of a particular child?
   b. Will it be possible to visit settlement houses, community centers, Sunday School classes, organized group activities such as Scouts, 4-H Clubs, etc.?
   c. Will it be possible to visit hospital clinics?
      To see the children who are being served?
      To get medical and psychological information?
      To get home information from parents either through interviews at the clinic or through home visits?
   d. Will it be possible to take care of children of various ages in their homes and thus have an opportunity to observe children in their home setting?

2. Discuss how to get this type of information without making children or their parents self-conscious. Discuss in class how a satisfactory approach may be made to parents in order to win their good will and cooperation. Study the following rules which should govern your observations:

a. An observation should be a fact-finding expedition only. It should never be regarded as an occasion for diagnosis of behavior.

b. A student, while learning, is never in a position to give advice to parents, teachers or clinicians.

c. Since the student is learning rather than serving, great care should be taken not to disturb situations or routines for children, parents, teachers or clinicians and not to make comments about the child or suggestions about what to do with him.

d. Before taking anyone's time (including the student's) for an observation, a careful plan should be worked out so that the student knows exactly what he is looking for.

e. No public agency should be contacted except after official arrangement has been made by the instructor.

f. It is imperative to maintain a professional attitude toward all facts learned about children and their families. Breach of confidence or a "gossipy" treatment of materials is highly unprofessional.

g. Discuss other rules which should be followed.

3. Observe two children of the same chronological age in junior or senior high school, one of whom is large for his age and the other of whom is small for his age – in the classroom, on the playground, and in the lunchroom (if there is one).

a. Are there physical differences other than size, e.g., do they differ in physical skills?

b. What are the differences in ability to accomplish work?

c. What are the differences in their behavior with other children?

d. What are the differences in the selection of food and the amount they eat?

e. As nearly as you can judge, what are the differences in the way they feel about themselves?

f. To what extent can these differences be attributed to sheer physical factors?

g. Find out if you can what their 24-hour schedules are. Do the schedules fit the physical and psychological needs of each? Suggest any desirable changes.

4. Observe a teacher in a classroom. Note how she utilizes the principles of growth.

5. Survey child development literature of the past five years for case studies illustrating any of the principles of growth.

SELECTED READINGS

Anderson, J. E.: Child development: An historical perspective. Child Development, 27:181-196, 1956.

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Co., 1963, Chapter One, Current Concepts and Theories of Growth and Development.

Caldwell, B. M., and Richmond, J. B.: The impact of theories of child development. Children, 9:73-78, 1962.

Murphy, G., and Murphy, L. B.: The Child as Potential. *In* Ginzberg, E. (ed.): The Nation's Children. Vol. 2. Development and Education. Published for the Golden Anniversary White House Conference on Children and Youth. New York, Columbia University Press, 1960.

Strang, R.: Introduction to Child Study. 4th ed. New York, The Macmillan Co., 1959, Chapters 1 and 21, Patterns and Principles of Child Development.

Stolz, H. R., and Stolz, L.: Somatic Development of Adolescent Boys. New York, The Macmillan Co., 1951, Chapter 1, The Study of Human Development; and Chapter 18, The Case of Ben.

A knowledge of growth would be meaningless without some understanding of the substances which go to make up the individual and the forces, within and without, which set the direction and pace for growth. Through knowing the factors which affect growth, adults can open the way to optimal development for children by providing satisfactory environment and guidance. In the following five chapters, therefore, we shall discuss the various influences upon growth. We shall begin with those within the child himself and proceed to those which operate through his environment. Thus, we shall discuss some of the physical factors within the child, the emotions, and such typical environmental factors as nutrition, home, school and community influences.

HEREDITY

The moment of conception when the parent cells fuse and when, therefore, a unique biologic pattern is fixed, is the most important moment in the life of a child. At that time a pattern for future growth and development of the individual is set. To what extent and in what direction a child's potentialities will be realized will depend upon his environment. Certain potentials may be partially or entirely repressed. A potential genius may become a moron because of a birth injury. Early rheumatic fever may injure the heart of one who otherwise

could have been an outstanding athlete. These two influences of heredity and environment are so closely interlocked that one cannot be considered separately from the other.

The dynamic relationship between these two factors may be seen by the influence that a child's genetic endowment may have upon his use of the environment. For example, a musical environment may be very stimulating to a child whose pitch and time discrimination are sensitive and who is emotionally able to respond to music. On the other hand, the same environment may leave another child untouched because he lacks these qualities. Given the same environment and all other factors being constant, a child with a higher intellectual endowment will tend to exploit his environment more completely than one with smaller potential. Thus, a very bright child may learn more from a meager environment than a less gifted child may learn from richer surroundings.

In view of observed facts, there is no doubt that some individuals with certain genetic combinations are more liable to certain diseases, such as tuberculosis, diabetes or certain mental illnesses. This does not mean that an individual who springs from a family in which there is a history of such a disease is doomed to have that disease. Tuberculosis is not a hereditary disease; it is caused by the tubercle bacillus. Whether an individual acquires the disease depends upon (1) exposure to the bacillus, (2) his genetic makeup, and (3) his health and nutrition. Some people inherit a high resistance; others inherit so little resistance that they cannot be protected by the best of environments; most people fall between. Diabetes, also, is not inherited as such, but a predisposition to it can be transmitted. Whether diabetes develops depends partly upon diet and partly upon the physical conditions of life. Some cases of diabetes are not caused by defective genes; some are due to disease or injury of the pancreas.

Certain types of mental illness develop because of the impact of certain kinds of environment upon a constitutionally weak nervous system. This was indicated during World War II when the stresses and strains of warfare were too much for some of the men and they became mentally ill. It must be remembered that, on the other hand, there are certain types of exposure to nervous strain that will eventually break down the best psychological constitution. For example, the strains of combat flying in the war eventually produced nervous symptoms in even the best selected of the men.

Environment includes habits of living, such as sleeping, eating, activity and adjustment to one's circumstances and to people. These factors need to be more carefully controlled for children with a familial tendency toward a disease than for children from a healthy background. Children with constitutional weaknesses need particular help in recognizing their own needs and in assuming responsibility for living the kind of life compatible with their constitutions. They need also, of course, to be protected from undue fear of, or anxiety about, disease.

How Heredity Operates. In the nucleus of the fertilized egg are found units that comprise the heredity of the individual and in which lie his potentialities for development. At the time of conception the new organism receives, in equal parts from each parent, 46 chromosomes (except for a few rare deviations)—44 autosomes and the sex chromosomes, XX or XY. These chromosomes contain probably about 10,000 pairs of genes (Stern, 1960). It is thought that the substance of the genes is a chemical, deoxyribo-

nucleic acid or DNA, which contains nucleotides of four bases which, in numberless varieties of combinations, appear to be capable of encoding all the characteristics that an organism transmits from one generation to the next (Strauss, 1960). All genetic differences, then, must be produced by differences in physiological processes of cells. By means of these processes tissues and organs emerge, and their arrangement into a harmonious whole which bears the unique characteristics of the individual occurs.

Sometimes the individual has less or more than 46 chromosomes because of abnormal chromosome behavior in the ovaries of the mother or in the eggs produced by her ovaries or in the sperm of the father (Ford, 1960). Certain abnormalities have been found to be associated with this condition. For example, the mongoloid has 47 chromosomes and is characterized by specific abnormalities in structure and retarded physical and mental development (Smith et al., 1960; Sandberg et al., 1960).

Genes do not act alone. They react with the cytoplasm of the cell, and they act also with one another. One characteristic may emerge from the action of many genes; the same gene may contribute to many characteristics. Examples of the former include those traits that show continuous gradation among individuals or "quantitative" characteristics, such as height, pigmentation, longevity, degree of resistance to disease, degree of intelligence. Inborn errors of metabolism are an example of the action of genes in which one gene has been responsible for interference in a regular metabolic process, thus producing a number of divergent characteristics. For example, the excess excretion of phenylpyruvic acid in the urine produces mental impairment and slight pigmentation disturbances of the hair, a condition known as phenylketonuria (Wright, 1957).

The expression of a gene may be influenced in various ways so that it is changed, suppressed or modified. Some genes are changed by mutation, although this is infrequent; some are part of the sex chromosomes X and Y and produce characteristics that are sex linked, such as color-blindness. Some are sex limited in that they are expressed in one sex only, e.g., the beard. Some are sex controlled or modified, as baldness. The genetic action may be limited by its strength in expressing itself (penetration), as is seen in the case of vitamin D-resistant rickets, a condition in which rickets occurs in spite of an adequate vitamin D intake.

Genetic action may not be expressed because the environment has not provided the necessary elements, for example, dietary habits and diabetes. Expression may be modified by environment, as illustrated by the serial differences in the height of children in the United States and other countries (Tanner, 1962); differences between the height of Japanese children born and reared in Japan and those reared in the United States (Greulich, 1957); and handedness, which has a genetic component but is often influenced by social pressure (Stern, 1960).

Characteristics Influenced by Heredity. Heredity and environment cannot be separated. There are gradations in the relative influence of the two factors. Certain characteristics can be attributed to heredity almost exclusively. In others, there is a strong environmental component. Yet again, others can be attributed primarily to heredity in one set of circumstances and to environment in another.

Sex of the child is basically determined by the genes of a special pair of chromosomes. In the female the two chromosomes are alike (XX); in the male they are different (XY). Every ovum that is ready to be fertilized contains one X. Some sperms contain

X; some sperms contain Y. If an X-bearing sperm fertilizes the ovum, the new organism will be a girl. If a Y-bearing sperm fertilizes the ovum, the new organism will be a boy. It is, therefore, the father who unknowingly determines whether his child will be a girl or a boy.

The characteristics that are accepted as due almost exclusively to heredity are color of eyes and hair, blood types, form of features, structure of body and many physical peculiarities. Differences in health and vigor, mentality, behavior, susceptibility and immunity to various diseases including dental caries, color of skin, stoutness or slenderness are considered to be due either to a goodly portion of both or a relatively small dose of heredity and a large dose of environment. They have been found to be the traits more readily affected by their surroundings than those enumerated as due almost exclusively to heredity. Although we never inherit criminality as a full-fledged behavior pattern, life patterns set by heredity help to determine whether behavior will be "social" or "antisocial." Some people become criminals not because of a particularly bad environment but because of internal instabilities that prevent them from making a satisfactory adjustment to the requirements of life. Most criminality, however, is thought to be environmentally determined. Most diseases, like tuberculosis, have a gentic component of susceptibility, and a large nongenetic component involving environmental factors. The fact that a child can be immune to diphtheria because he is born that way, as some children are, or because he has been immunized by toxoid, illustrates the fact that the same characteristic in different people may be due to genetic or to environmental force. Another example is feeblemindedness, which can be inherited or can result from a birth injury or early childhood disease.

Effect of Heredity upon Intelligence. There have been many studies of the effect of heredity and of environment upon the development of intelligence and personality. Studies of pairs of identical twins reared separately and of identical twins reared together as contrasted to pairs of fraternal (nonidentical) twins reared together have led to the conclusion that environment does modify those characteristics described as intelligence, personality, and educational achievement (Skodak, 1949).

The resemblance between "identical" twins who have been reared apart is likely to be higher than that between ordinary brothers and sisters reared in the same home. This indicates that the factor of inheritance in intelligence is of considerable importance. Studies of the correlation between the intelligence of foster parents and adopted children indicate that a good home environment can help a child to make the best of whatever intelligence potential he has. One study confirms the long-accepted clinical opinion that emotional warmth and security are of great importance in developing the best of the intellectual potential in own as well as in adopted children (Winterbottom, 1958).

Environment probably cannot, however, change this potential by more than a certain amount in either a good or a bad direction. It appears that as far as intelligence is concerned heredity seems to set the stage for the major level of intelligence. An idiot cannot be made normal, although his functioning level can be improved. A low normal child cannot be trained into a genius. University of California studies found that the greatest IQ gains recorded in any study are in the neighborhood of 50 points (Bayley, 1956). This amount is of great significance since it can mean all the difference between successful functioning in life and failure.

Effect of Heredity upon Personality and Behavior. In the area of personality and behavior the dynamic relationship of heredity and environment again is evident.

The importance of heredity upon personality and behavior has been demonstrated in many studies. Direct evidence comes from family histories of diseases such as epilepsy (Lennox, 1951), phenylketonuria, amentia (Wright, 1957), studies of intelligence (Lennox, 1951), and the functioning of the autonomic system (Jost, 1944). Indirect sources of evidence are many, including (1) consistent individual differences of newborns in areas such as activity, irritability and reaction to stress; (2) the meaningful relationships between various personality traits and variability in endocrine or autonomic functioning; and (3) correlations between body type and temperament, neurotic and psychotic trends, and hormonal and autonomic functioning. It is suggested that this is not a simple type of inheritance but rather polygenic.

Gottesman (1963), in a study of 68 pairs of adolescent twins, reaffirmed evidence that psychopathology has a substantial gentic component and that the dimension of introversion was influenced most heavily by genetic factors.

It seems evident that heredity may influence personality and behavior through its effect upon the metabolic processes of the body since the genes can be thought of as potent physiochemical activators.

The personality of an individual can be viewed as the resultant of the interaction of this "metabolic personality" with the psychological, social and cultural forces about him. That environmental forces are potent in the formation of personality is evident in a number of studies. For example, studies of the inheritance of mental disease reveal a situation very much like that in physical disease. A potential vulnerability to given mental illnesses may be inherited, but whether or not any given offspring will develop the disease will depend upon the type of his life experiences (Stern, 1950).

Studies of identical twins are generally interpreted as indicating that hereditary-constitutional factors are of considerable, if not of predominant, importance in determining the general direction or core of personality pattern. Mental and motor abilities were studied in 20 pairs of infant twins of the same sex on a monthly basis during their first year, that is, before mental imitation becomes a factor. Differences between the twins in any one pair were significantly greater within the fraternal pairs on all tests and rating scales. The identical twins were significantly more alike than were the fraternal twins (Freedman and Keller, 1963).

There is not such clear agreement about the development of specific personality traits. The tendency on the part of the growing child to show himself as a certain kind of person and then, in spite of rather marked environmental changes, to be true to this pattern as time goes on has been corroborated in several types of studies. In summarizing these studies, Jersild (1960) notes that this persistance of personality characteristics is an important fact whether it is attributable to gene-heredity or stems from environmental factors that affect the child in very early life.

Peck and Havighurst (1960) studied children from 10 through 17 years of age and found that during these years they gained new social and intellectual skills, but each child appeared to maintain very persistently his deeply held feelings and attitudes toward life and his modes of reaction, which these authors call his character structure. It is the significance and value that the young person's social group places upon him that becomes a crucial factor in his personality

development. This social-cultural influence has also been emphasized by Coleman (1961).

Thus we see in the nature-nurture discussions differences in emphasis but general agreement that gene inheritance, the early family environment, and the social-cultural impact all have a part to play in determining the pattern and direction of personality development.

Implications for Child Development. Earlier we discussed the importance of recognizing individual differences in children in planning for them as individuals and in groups. In this chapter we have seen that the interplay of heredity and environment produces these differences. A look at heredity offers us one explanation for children's selective response to their environment. All children have certain needs for growth. All children do not meet these needs in the same way. Children will differ in sleep and activity requirements and in sensitivity to emotional stimuli. There can, therefore, be no program that is standardized in detail for all children in the home or school. It is to be remembered that children in the same family do not generally have exactly the same genetic makeup, so their response to the home environment will differ. Also the environment for each child in the family will be somewhat different, either because of time and the changes which come with it, or because of differences in relationships.

If the parent has knowledge of the family background with its assets and liabilities, this knowledge may allay unnecessary fears on the one hand and give a realistic approach to possible difficulties on the other. Knowledge of possible potentialities will help parents to plan intelligently for their children.

Checking on the hereditary ledger should not result in a laissez-faire policy. It should give one a basis on which to operate. Environment is a strong factor to be remembered. As Todd once said, "The adult physical pattern is the outcome of growth along lines determined by heredity but enhanced, dwarfed, warped, or mutilated in its expression by the influence of environment in the adventure of life." The same can be said for psychological growth.

Influence of the Interaction of Heredity and Environment on Growth Patterns. Various longitudinal growth studies, at the University of Michigan, Fels Institute for Research, and Brush Foundation, provide evidence that children of the same family tend to show a notable similarity in their patterns of growth. (See Figs. 12 and 13.)

Growth pattern shifts in healthy children of small stature, shifts that occurred spontaneously and those that were induced by use of 17 alpha-ethyl-19-nortestosterone or methandrostenolene, were studied by Bayer and Bayley (1963). All children treated responded with an acceleration of growth; there was no virilization in the girls and symptoms in only one boy. The effect of the treatment was followed by use of the Bayley-Pinneau predictions. The predicted adult height rose following treatment in seven of the sixteen boys and in two of the four girls who were treated over a period of 6 months; it fell in three of the boys and two of the girls; it was unchanged in six boys. The authors conclude that cautious treatment with these steroids has not decreased the final height in the average of these children.

In physical growth there also is evidence of similarities in families. Similar growth patterns in height, in bone development and in tooth decay, and similar speed of maturing have been seen. There are slow-maturing and fast-maturing families. Similarities

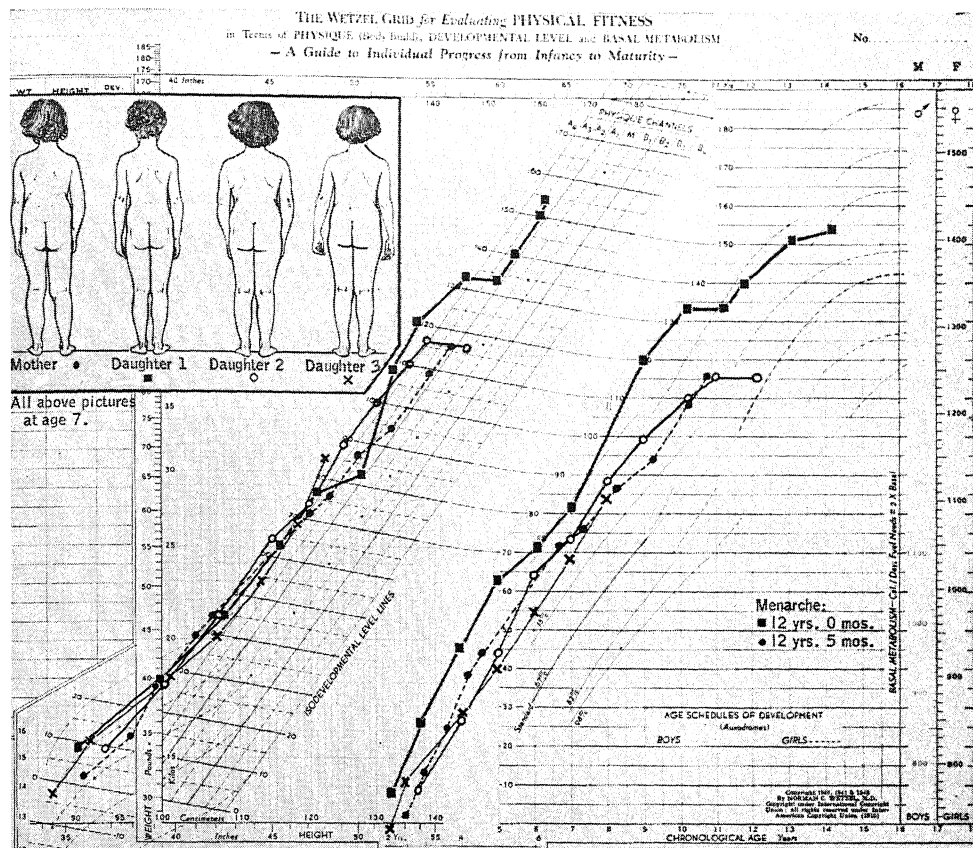



FIGURE 12. Similar patterns of growth of mother and three daughters. Height-weight plotted on the Wetzel Grid indicates that they are of stocky build and on a fast rate of development.

in the growth of a mother and three daughters are shown in Figure 12. They are all in the A channels of the Wetzel Grid (of stocky build) and are on fast schedules. (For discussion of the Wetzel Grid, see Chapter 7.) They are all advanced in skeletal development (Fig. 13).

Knowing the father and mother of a child may help in the interpretation of his health status and growth. There are some children who, in spite of the best environments, are underweight, perhaps have poor muscular tone or are just not robust. When such a child is seen with his parents he may be recognized as a "chip off the old block."

Members of a family may have different as well as similar patterns of growth. Such differences are not evidence against the force of heredity but rather indicative of the differences in the genetic backgrounds of the parents.

Effect of Prenatal Environment on Development. It has been stated above that the immediate environment within the body influences the action of the genes. The normal course of development as set by them can be altered by changes in the environment of the fetus in the uterus. Some contributing factors may be maternal dietary inadequacies, viral infections as, for example, German measles

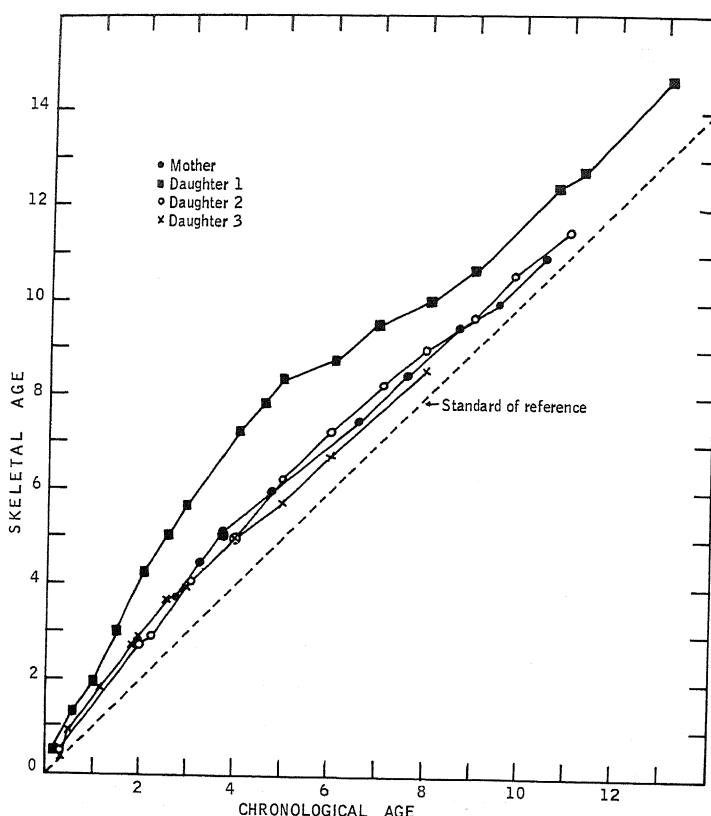



FIGURE 13. Curves of skeletal age of mother and three daughters, indicating advanced skeletal maturation for all.

during the first six to ten weeks of pregnancy. A child whose mother has had German measles in early pregnancy may have congenital defects. The virus evidently affects the young developing tissues of the brain, eyes, ears or heart. Such malformations, however, are rare.

"Among women who smoke cigarettes during pregnancy, there is a tendency to have babies of lower birth weight and there are a significantly greater number of premature deliveries" (Surgeon General's Committee on Smoking and Health: Report; U.S. Public Health Service, 1962).

In a study of the literature from 1956 to 1961 it was concluded that unsuccessful attempts to induce abortion with drugs was one of the probable causes of congenital malformations (Kucera and Benesova, 1962).

Maternal health during pregnancy is also important. Passamanick, Lilienfeld and co-workers (1954) have found an association between the frequency of abnormalities of prenatal and immediately postnatal periods and the frequency of cerebral palsy, epilepsy, mental deficiency, reading disorders, and behavior disorders as reported by teachers.

Yamazaki (1954) found that radiation is another important influence, as is the Rh factor. Rh factors, so named because they were first discovered in the blood of a rhesus monkey, may produce an incompatibility in the blood of mother and child. They are inherited. When a mother who has no Rh

factor (Rh negative) has a baby who has Rh factors (Rh positive), a substance from the baby stimulates the formation of a substance in the mother which, in time, may act upon the blood cells of the baby and prevent them from distributing sufficient oxygen. Thus, through deprivation of oxygen, development may be altered. Mental deficiency may result if the deprivation of oxygen, which is so necessary for brain tissue activity, should occur when the brain is in a critical stage of development. However, two studies of infants recovering without motor nerve damage from erythroblastosis fetalis indicate that impairment of intelligence is slight (Day and Haines, 1954; Gerver and Day, 1950). In one study the IQ was 11.8 and in the other 6.13 points lower than their unaffected siblings. Sensitization of the infant with ensuing anoxia seldom happens to a first child. Even though about one in every twelve pregnancies involves an Rh-negative mother and an Rh-positive baby, the Rh disease has been found to appear in no more than about one in every 150 to 200 full-term deliveries. In view of present knowledge and the safeguards that can be taken, an Rh-negative woman and an Rh-positive man need not hesitate to marry and have children.

Asian flu during pregnancy has been found to increase the number of infantile anomalies; the incidence of anomalies was higher when the disease occurred during the first three months of pregnancy. Asian flu also increased the number of premature births as well as the stillbirth rate and prenatal mortalities (Hirveusalo et al., 1962). In a study of 19 drug addicted mothers and their 12 premature and 11 full-term infants, addiction was thought to be associated with the fact that of the 23 infants in the study, 6 were born in the breech position, 19 had respiratory distress, and 17 had withdrawal symptoms (Sussman, 1963).

Since the occasional birth of deformed infants to mothers who have been given certain steroids and other drugs in the early months of pregnancy, considerable attention has been given to the study of the effects of such drugs on the development of the fetus. Hagler et al. (1963) analyzed 100 women who, among 13,768 maternity patients studied, had been given steroids. No male pseudohermaphroditism or feminization of the genetic male was observed in this series, which also included 19 male babies whose mothers had received estrogen (a female hormone) during pregnancy. The authors recommended caution in the administration of any drug during the early weeks of pregnancy, especially until better knowledge has accumulated relative to the undesirable effects on the fetus of various drugs administered during pregnancy. Beaudry and Sutherland (1960) found that birth weights of infants of toxemic mothers were not lower than those of infants born to a control group.

A history of anxiety during pregnancy has been found to be associated in the children who are products of that pregnancy with lower scores on tests of intelligence and indices of emotional adjustment than are found in the children of nonanxious mothers (Davids et al., 1963).

MATURATION

Definition. There is a lively controversy about a factor in development that is neither clearly to be classed as inheritance nor as modification from environmental influence. So, too, there are differences in the concepts of growth and of maturation. Use of the term "growth" in the study of child development varies. Sometimes it is used to indicate the totality of change; at other times it is used to describe differentiation within structures or organs. The term "maturation" is

usually used to designate qualitative change, that is, changes in the complexity of structure which make it possible for a structure to begin functioning, or to function at higher levels.

Many writers have associated the inner process of maturation with a "ripening" or "readiness" of capacity based primarily upon a maturing of the body organs or systems. It is assumed, for example, that a certain maturing of the nervous system must occur before given capacities are ready for use. Until myelinization of nerves leading from the bladder and the rectum occurs, the child cannot be aware of fullness of either organ; he is not "ready" for toilet training. The timing of subjects in school, for another example, has been gauged by the average "readiness" of children for the subject. Certain maturities of language capacity, of eye control, of ability to concentrate, and so on, are needed before a child can learn to read.

That such developmental accomplishments are basic before given learnings can proceed is not the point at issue. The debate centers around whether maturation occurs in all children as an inherited "urge," or propensity for growth, or whether it is at least somewhat the result of experience. Such writers as Ausubel (1958) say: "Under the heading of maturation can be subsumed that portion of any increment or change in capacity referable to genic influence and/or incidental experience" (p. 81). Development in traits common to the race, such as fear when life is threatened, proceeds largely because of genetic influence. Development in traits peculiar to the individual, such as fear of dogs or lightning, proceeds primarily because of learning from experience.

Olson (1959) uses the term "maturation" to cover the anatomic, physiologic and chemical changes of the body that occur with time and over which we have only slight control; they push the child toward adulthood. He says that all of these "in-built" forces that effect such changes fail unless there is an appropriate environment. He uses the term "development" to designate the complex product of maturation (nature's design) and nurture (needs and requirements for growth)." Maturation demands nuture for development; development works with maturation to produce succeeding steps in development which, in turn, makes greater demands upon environment. Olson uses a circle (Fig. 14) to represent this interlocking relationship.

Learning "Readiness." There are many studies which indicate that most forms of learning cannot take place until children are "ready" both in general bodily development of muscles, nerves, and physical proportions, and in interest and willingness to learn. Many of these studies in the child development field concern motor learnings, and many others concern the learning of language, academic skills and social skills.

In general, the evidence from these studies indicates that until a child has readiness to learn, training in any particular activity is useless and may even establish negative feelings toward the activity which will retard

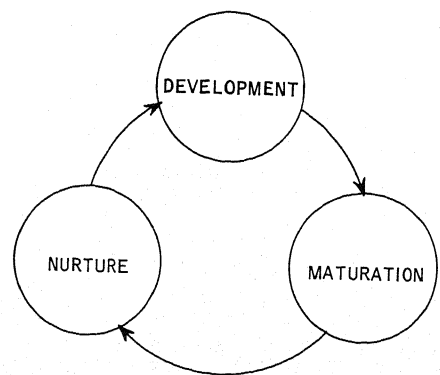



FIGURE 14. Olson's circle: the interlocking relationship of development, maturation and nurture.

learning. When he is ready he may display this fact by showing an interest in the activity. At this point he will benefit greatly from practice and teaching in the activity: he will, in fact, be eager to learn and will often practice the newly developing skill assiduously.

Influence of Environment on Development of Potential. As we have seen, maturation and practice go hand-in-hand. Without sufficient maturation, practice is inefficient; without practice, the ability which has matured may disappear.

Studies in which one identical twin was "coached" in some skill before the usual age at which it would appear naturally while the co-twin was not so coached show that the forced learning was neither more superior nor more lasting than the learning of the co-twin in the same skill (McGraw, 1946). They also show that when "readiness" is present the learning is accomplished with far less time and effort. We must not conclude, however, that children will learn without teaching whenever they are ready. Whereas forcing of learning is not profitable, neither is a laissez-faire attitude.

In a study of stereotyped behavior of the infant chimpanzee, Davenport (1963) found that stereotypes in infant chimpanzees were related to rearing variables, developmental status, immediate stimulus situation, and various forms of ongoing activity. Most strikingly, stereotypes are phenomena unique to infants raised in restricted environments. These commence within the first few months of life and persist into adulthood. The author comments that these stereotypes in the chimpanzee show marked resemblance to behavior of human beings with certain pathological conditions.

That environmental factors are vital to the development of any potential which is set by hereditary and maturational factors is assumed. How various environmental factors affect this potential is essentially the content of the rest of this book.

ENDOCRINES AND THEIR RELATION TO GROWTH

Definition and Function. The endocrines are glands that are distributed widely throughout the body; they differ from one another in their structure and in the nature of their secretions. Unlike salivary glands or other ducted glands, which secrete through ducts, the endocrine glands secrete directly into the blood stream and are, therefore, called ductless glands or glands of internal secretion. They include the pituitary, thyroid, parathyroids, adrenals, pancreas, ovaries and testes (Fig. 15). At present there is no final proof that the thymus and the pineal body have endocrine functions (Houssay, 1955).

The endocrines are intrinsic regulators of development. They affect health and development through the secretion of complicated chemical substances, called hormones, which are liberated directly into the blood stream and are carried to all parts of the body where they have special functions of initiating, regulating and controlling some of the activities of organs and tissues. Although the amount of the secretions of these glands may be almost inconceivably small, they have incredible potency. Normally, for instance, the body uses about one-fourth to one-third of a milligram of thyroxin per day although its influence is great (Houssay, 1955).

The functions of these hormones are widely diversified. They range anywhere from influencing the rate and pattern of growth and maturation to regulating the amount of water excreted by the kidneys. They even regulate one another. The activity of one gland is affected by the secretion of another, and thus the performance

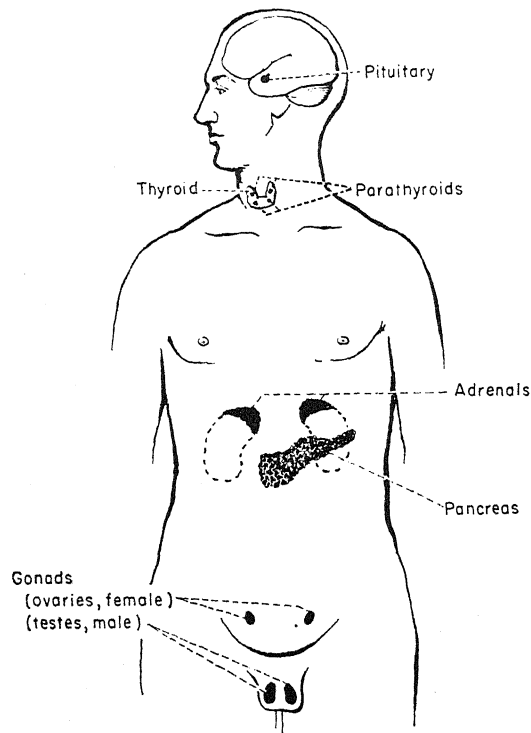



FIGURE 15. Locations of glands of internal secretion.

of one gland reflects the activity of another. This is nicely demonstrated, as will be shown later, in the relationship between the activity of the pituitary gland and the adrenals and gonads.

Differences in the amount of hormone secreted and differences in the response to these substances produce diverse patterns of bodily function and development. An individual may have too little, too much, or a normal amount of a particular hormone. Thus, there is a possibility of three functional patterns being produced by each hormone. In the case of the pituitary, too little growth hormone may produce dwarfism; too much may result in gigantism; a normal level of secretion will make for normal growth. Just how far the differences in growth within the range of normality can be attributed to differences in endocrine function cannot be determined at present.

Thyroid. The thyroid gland, consisting of two lobes connected by a narrow strip, is situated in the front of the neck and secretes a hormone that regulates the rate of oxidation in the body and, therefore, is related to cellular activity. The activity of the thyroid influences the rate of growth, the development of the bones, the nervous system, circulation, muscles and, in conjunction with pituitary and gonads, the functioning of the reproductive organs. It also affects the rate at which foodstuffs are utilized for body maintenance and growth.

A decrease in the thyroid function, called *hypo*thyroidism, results in a decrease of tissue activity. When the thyroid deficiency existed before birth it causes cretinism. (This should not be confused with mongolism, which is not of endocrine origin.) In this condition growth is retarded and bodily proportions remain infantile. Bone

development is retarded; dentition is delayed. Sexual maturation is delayed or does not take place at all. The muscles of cretins are flaccid and the maladjustments of the neuromuscular system are evidenced by marked apathy, defective speech, clumsy gait and incontinence. The skin is thick and dry; the hair is sparse; the nails are thin and brittle. The tongue is large and protruding. The cretin is pale and anemic, has a low basal metabolic rate and a lowered body temperature. In most cases intelligence is seriously retarded and attention is dulled. Movements are slow and awkward. The general impression is that of an individual with radically retarded intellectual ability.

If the administration of thyroxin is begun early in infancy and continued uninterruptedly, the chances for approximately normal physical growth and development are good. The chances for normal mental development are not so favorable. Congenital brain defect or damage done to the brain during embryonic life and early infancy as a result of hormonal deficiency may be irreparable. However, treatment in the first year may permit normal mental development. Smith et al. (1957), in a follow-up study of 128 cases, found that 45 per cent of severe cretins who were treated before 6 months of age attained an IQ of over 90; 77 per cent of those who became hypothyroid between 2 and 12 years had an IQ of over 90. The attainment of normal mental development depends upon the degree and time of onset of deficiency, the length of time between the onset of the deficiency and treatment, and the age at which treatment was begun and its adequacy.

When the deficiency in thyroid hormone is less severe, the signs will naturally also be less severe in degree. Age at the beginning of such a deficiency and its degree and duration will influence the manner in which it is

Johnston (1957) states that some degree of hypothyroidism is fairly common around the onset of sexual maturity. (The high incidence in this study may be due in part to the fact that the observations were made in Michigan, an endemic goiter area.) The symptoms which he has noted have been delay in growth and development, mental retardation, fatigue and menstrual disorders. Many of his patients with hypothyroidism have been referred to him because of unsatisfactory progress in school. After treatment an increased attention span has been noted. It would be wise to check the functioning of the thyroid gland in adolescents who seem to be unduly "lazy."

An excess in thyroid function, called *hyper*thyroidism, is characterized by excessive movement and emotional instability, trembling, increased activity of the circulatory system and "starey" eyes. It is rarely found in childhood but is more likely to appear at the onset of pubescence (Wilkins, 1957).

Simple, endemic goiter, an enlargement of the thyroid gland which is a compensatory mechanism to supply the needs for thyroid hormone, occurs in childhood and adolescence. Usually there is no evidence of disturbed thyroid function, but occasionally a child with a goiter will have some degree of hypothyroidism (Wilkins, 1957). This type is a deficiency disease generally recognized as being caused by a lack of iodine. Its incidence is relatively high in certain regions of the world. In North America such regions are found in the basin of the St. Lawrence River and the Great Lakes, in the Pacific Northwest and the great plains. In these areas the iodine content of the water and soil is so low that some source of iodine other than food and water has to be found to satisfy the body's need for this substance. Michigan at one time had a

high percentage of schoolchildren with goiters. A survey of schoolchildren in four counties in 1924 showed that 47.2 per cent had enlarged thyroids. Iodized salt was introduced throughout the state, accompanied by an educational program. A resurvey in 1951 indicated the success of the program by showing that the incidence of enlarged thyroids had been reduced to 1.4 per cent (Atland, 1952).

The Council on Foods of the American Medical Association states that the prevention of goiter is a nutritional problem and that table salt containing not more than 1 part iodide per 5000 parts of salt may be considered as prophylactic. It maintains that iodine deficiency and the prevention of goiter are an educational problem while cure is a medical one.

Parathyroids. The four parathyroids are small glands adjacent to the thyroid gland. Their secretion acts as a homeostatic mechanism for maintaining levels of calcium and phosphorus in the blood which are necessary for regular tissue activity (Wilkins, 1957). Indirectly, through its effect upon calcium metabolism, this hormone plays a role in the maintenance of the integrity of the structure of bone, in the regulation of neuromuscular activity, in the conduction of heart impulses, in the coagulation of blood and in the permeability of cellular membranes. Through its regulatory effect upon the availability of phosphorus it can influence body tissues, many enzyme systems and the regulation of acid-base balance in the body. The parathyroid secretion ebbs and flows according to physiological needs. When hormonal production is out of keeping with physiological needs, which rarely occurs in children, certain symptoms are noted. Underactivity may result in tetany, an abnormally increased reactivity of the nervous system to stimuli. Overactivity leads to decreased neuromuscular irritability so that the muscles of the body are less responsive to stimuli. Demineralization of bone may occur, resulting in spontaneous fractures because of bone fragility.

Pancreas. The pancreas is a gland of both external and internal secretion. It is a part of the digestive tract in that the main part of the pancreas secretes and pours through a duct into the intestine a substance necessary for the digestion of foods. In addition, scattered throughout the gland are clusters of cells (known as the islets of Langerhans) producing a secretion which is poured directly into the blood and which regulates the use of sugar by the body. The hormone produced is called insulin. When inadequate amounts of insulin are produced, carbohydrate metabolism is disturbed. There is a rise in blood sugar, sugar appears in the urine, and the condition known as diabetes mellitus results. This condition can be treated by regulated doses of insulin.

Adrenal Glands. The adrenals are paired organs located on top of the kidneys. They consist of two parts: the cortex (outer portion) and the medulla (inner portion), which differ in their embryonic origin and in their functions. The cortex is formed from the same embryonic tissue as the reproductive organs. The medulla has its origin in common with that of the sympathetic nervous system.

The cortex secretes hormones which influence the metabolism of sodium, potassium, carbohydrates and protein, the development of pubic and axillary hair, and the appearance of acne (Wilkins, 1957). These hormones, therefore, affect development, play an essential role in the body's homeostatic mechanisms and in muscle fatigue and also aid in the body's adaptation to stress and strain (Selye, 1956).

The androgens of the adrenals, which induce the development of

pubic and axillary hair, unlike the other adrenal hormones, do not generally begin to be secreted in significant amounts before the eighth or tenth year. Thereafter their secretion increases steadily. In both boys and girls these hormones are responsible for the accelerated growth and muscular development which occur in adolescence. Without a sufficient amount of these androgens girls fail to develop pubic and axillary hair. In boys the androgens in the testes can substitute for adrenal androgens in producing these developmental changes. Disturbances of an adrenal cortex origin are relatively uncommon in children.

The secretion of the medulla, consisting of epinephrine and norepinephrine, plays a role in aiding the body to adapt to sudden stress.

While these two hormones combine to produce the characteristic effect of the adrenal medulla secretion, they function differently. Both raise blood pressure but by different mechanisms. Epinephrine has a greater metabolic effect as, for example, in increasing oxygen consumption and in raising blood sugar levels, than has norepinephrine. They respond differently to emotions. Evidence seems to show that anger elicits the secretion of norepinephrine; fear and anxiety elicit the secretion of epinephrine (Funkenstein, 1955).

Secretion from the medulla causes the release of ACTH from the pituitary gland which, in turn, stimulates the secretion of hormones of the adrenal cortex. It also produces effects similar to those produced by stimulation of the sympathetic nervous system, as mentioned before. Under emergency conditions of emotional stress or danger, the secretion (stimulated by the sympathetic nervous system which, in turn, has been stimulated by the hypothalamus) is enough to cause constriction of the blood vessels, acceleration of the heart rate, some delay in fatigue, rise in blood sugar and increased coagulation of the blood. Thus the body is made ready for vigorous action. (See Chapter 3.)

Sex Glands or Gonads. The sex glands consist of the testes in the male and the ovaries in the female. These glands produce the germ cells plus internal secretions and thus play a dual role in influencing the growth and development of the individual. The male sex hormones (androgens) and the female sex hormones (estrogen and progesterone) are responsible for bringing about changes characteristic of early adolescence. The male hormones stimulate the development of the male genital organs and the secondary sex characteristics, including growth of the beard and deepening of the voice and, along with adrenal androgen, are responsible for the adolescent growth spurt. Secretion of the male hormone has no cyclic variations. The ovarian hormones, in the girl, stimulate the growth of the breasts, the uterus, fallopian tubes and vagina, are responsible for menstruation, and provide an environment suitable for growth of fertilized ova. Unlike the male, the female hormones are secreted in a periodic cycle, commonly termed the menstrual cycle.

With the development of the gonads and the accompanying increased liberation of the sex hormones into the blood stream, changes in the quality and amount of sex behavior may be expected. It would seem that any relationship between the level of gonadal secretions and the pattern of sexual behavior of preadolescents and adolescents is not simple and direct (Kinsey, 1953). Sexual behavior is a resultant of a number of factors, physiological, psychological and sociological, among which learning and experience in a particular culture are important (Montagne, 1957). The physiological changes in boys and girls

due to gonadal development have many accompanying psychological changes, which will be discussed later.

Boys and girls have both estrogen and androgens. The absolute and relative amounts vary with age. Probably these hormones come from the adrenals instead of the sex glands during preadolescence (Wilkins, 1957). Small, about equal, amounts of estrogen are found in the urine of both sexes until around 10 years of age, when the estrogen increases rapidly in girls but remains much the same as formerly in boys. Similar amounts of androgens are also found in boys and girls until the middle teens, when they begin to increase more markedly for boys than girls. Thus, during early and later adolescence a marked sex difference in these secretions becomes apparent. This is interesting in relation to the widening differences noted between boys and girls during early adolescence. What this might mean in terms of these sex differences is not known at the present time.

Pituitary Gland. The pituitary gland is a small gland about the size of a large pea and weighs about one-fifth as much as a five cent piece. It is attached to the base of the brain and consists of two parts, the glandular anterior portion and the posterior neural portion. This gland influences almost every organ in the body either directly or indirectly by way of other endocrine glands. It therefore influences growth and maturation.

The anterior lobe produces several hormones. The growth-promoting hormone regulates body growth. If there is an excess of this hormone during the growing years, an individual may become a giant, attaining a height of as much as 8 or 9 feet. Extreme height is due to excessive growth of the long bones. Ordinarily, growth in these bones ceases during adolescence but, in giants, these bones continue to grow for a longer time. If the excessive secretion occurs after the growing years (about 25 years), the bones cannot grow longer but become coarser and heavier. This is especially true of the bones of the jaw, hands and feet, a condition called acromegaly.

A deficiency in the secretion of this growth hormone suppresses growth. The extreme of such a condition is one type of dwarfism. Such an individual has body proportions normal for his chronological age; the features are immature; the skeleton is delicately formed and retarded in maturation; sexual maturation usually fails; mental development is usually normal.

Other pituitary hormones stimulate the growth and function of other endocrine glands. They affect the thyroid (thyrotropic), adrenal cortex (adrenocorticotropic, ACTH) and the gonads (gonadotropic). Ham (1957) calls the pituitary gland the "chairman of the endocrine society." All the different members report to it regularly about their activity and the pituitary, in turn, by its hormones, has a controlling influence on the structure and function of the various members. The anterior pituitary is not the master organ, however. It appears that it, in turn, is controlled by the hypothalamus of the central nervous system and is affected by hormones of the other glands.

Normal growth and development depend upon the reciprocal and properly timed action of the various hormones. The developmental changes during adolescence arise from the interaction of the anterior pituitary, adrenal cortex and gonads. Apparently, the hypothalamus stimulates the pituitary gland to secrete the hormones that stimulate the immature gonads to develop into mature ovaries and testes. At the same time the adrenal cortex increases its secretion of androgens. Increasing amounts of sex hormones and adrenal andro-

gens are produced which stimulate the development of reproductive organs and secondary sex characteristics. With the maturing of the sex glands and their hormonal activity, growth ceases either through the direct action of these hormones upon the developing long bones or their inhibiting action on the pituitary growth hormone. Thus, the interaction of these hormones is responsible for the adolescent changes and the subsequent cessation of growth. Differences in the timing of this activity and receptivity of the gonads and adrenal cortex may account for individual differences in the pattern of adolescent development (Wilkins, 1957).

The gonad-stimulating hormone continues to be important since it is necessary for the regular functioning of the sex organs, including the cyclic changes involved in menstruation throughout the individual's reproductive life.

In addition, the anterior pituitary plays a role in the body's adaptation to stress through the effect of its hormone, ACTH, upon the adrenal cortex activity. There is also a hormone which stimulates and provides for the continuation of lactation.

The posterior lobe influences water metabolism, increases the concentration of urine and causes contraction of all involuntary muscles, including those of the blood vessels, intestines and uterus.

Effect of Other Growth-promoting Substances. Anabolic steroids administered to prepubertal mongoloid children over a 2½-year period showed that norethandrolone produced significantly greater increases in height age than occurred in the control group. Another steroid (methyltestosterone) did not produce increased height age. Both of these steroids produced a significantly greater increase in bone age during the treatment period than occurred in the control group and the effects persisted throughout the 2½-year period. Pubic hair and phallic enlargement occurred to a mild degree and were approximately equally distributed between the experimental and control groups (Kirschvink et al., 1963).

A course of Dianabol was given to 23 children who were below the third percentile in height for various reasons. The group consisted of children aged 2 to 16 with bone ages of 1 to 13. Growth was observed for 8 to 20 months. An increased rate of growth was observed in 10 of the 23 cases but in only 3 did the increase in height age exceed the increase in bone age. Virilization occurred in correlation to size of dosage (Hubble and Macmillan, 1962).

In a later study oxandrolone, another anabolic steroid, was found to have some advantages over the above steroids in advancing height age more than bone age. In the use of this steroid, androgenic side effects were minimal (Ray et al., 1963).

Relationship of Endocrines to Behavior. The principle of the interrelatedness of the many facets of an individual, as expressed in Chapter 1, applies to the relationship of endocrines and behavior. Physiological and psychological processes are mutually dependent variables. Endocrines play a role in the physiological processes and, through these, in behavior and personality. They influence strongly the speed and violence with which an individual breaks into emotional behavior and, in important ways, the pattern of the moods he develops. Differences in the functioning of the thyroid gland, as indicated earlier, produce differences in available energy. This, in turn, determines to a great extent the amount and kind of activities an individual chooses and the tempo and endurance with which he pursues them. The on- or off-

schedule of sexual maturation, which depends in part on the gonads, may create ease or difficulty for an adolescent in fitting into society. The gonads play a role in establishing differences between the sexes in size, body configurations, muscular strength, and endurance, and these differences may be directly responsible for differential reactions to the environment. Individual responses to stresses both physical and psychological seem to be tied up with an endocrine chain reaction (Selye, 1956). These are some examples of possible relationships of endocrine functions to behavior.

There is also another factor that is always present, namely, the feelings of satisfaction or concern about oneself and one's relationship to parents, siblings, friends and the larger social group. Personal adjustment of children who have noticeable physical deviations due to endocrine dysfunction may be facilitated or hindered because of attitudes of parents and teachers and also by the training and help the children receive in adjusting to the defect.

Much research has been and is being done on this problem of the relation of endocrines and behavior. At present it can be said that endocrines, in contributing to good or poor physical health, growth and functioning, contribute to wholesomeness and balance in personality or to malfunction in the personality as well.

PREMATURITY

Because of the immaturity of the infant and abnormalities that may be present, the premature (any infant with a birth weight of less than 2500 grams, or 5½ pounds) has a more difficult adjustment in early postnatal life than does a full-term infant. Particular care in the early weeks of life is demanded to protect the infant and to provide for its development. The greater the prematurity, the greater the mortality and the more difficult the adjustment for those who do survive.

A study of 1803 premature infants less than 28 days old, admitted to the Children's Hospital in Helsinki, revealed the neonatal mortality rate to be 53.5 per cent (Ahvenainen and Maytta, 1962). Baumgartner (1962) found that birth weight per se is not so significant in determining the survival of a premature infant as is the state of his physiological development and efficiency. There is increased risk of respiratory morbidity among premature infants (Miller and Levy, 1961). Healthy prematures studied over the first month of life tended to have essentially the same duration and amplitude in electrocardiograms as did full-term infants during the same period (Salmi, 1960). In the survival of prematures human milk alone may not prove sufficient and may have to be supplemented, especially with protein (Omans et al., 1961). Crosse (1961) advised transferring infants weighing less than 2000 grams (about 4½ pounds) to a hospital.

In a study in India Raghiviah et al. (1962) found normal reflexes in prematures when the infant's weight was above 1700 grams (3¾ pounds). This study concluded that infants weighing 2000 grams and above do not need special institutional premature care. Nicola and Ausaldi (1961) found that after 2 years of age somatic and morphological values in prematures become normal, even though some morphological features are typical of the earlier ages.

The "Future" of Prematures. A study of prematures, compared with full-term infants, covered their first five years of growth (Drillian, 1961). In this group of 595 children, born in Edinburgh, Scotland, between 1953 and 1955, one-third of the group

weighed 4½ pounds or less at birth, one-third weighed between 4½ and 5½ pounds, and one-third were mature controls. Approximately 100 pairs of twins were included. The results showed that the prematures grew in length and weight faster than the controls during the first two years but, after this, further catch-up was relatively slight.

Izmuzi (1963) found an indication that premature infants in Japan had more colds and fevers up to age 6 than did his control group, but that after 6 there was no difference in health conditions. He found that there was no difference between the two groups in IQ, but that the Children's Anxiety Tests showed more "baby wishes" in the premature group, and more "adult wishes" in the full-term group. Mothers of prematures were found to be more overprotective in attitude.

In intellectual development, Rossier (1962) found that 80 per cent of prematures, at ages 4 to 7 years, were normal in motor development, and 78 per cent were normal in mental development.

Lubchenco et al. (1963) studied 63 children who weighed 3 pounds 4 ounces or less at birth and who were available for study at approximately 10 years of age. He found that 68 per cent of this group had central nervous system and visual handicaps, the severity of these handicaps being inversely related to weight at birth. Physical growth retardation was severe, social and emotional problems were encountered, and school failures among children with normal intelligence were seen in 30 per cent of the group. Response to visual stimulation was found to be negatively correlated with body weight at birth up to about 12 pounds (Ellingson, 1960).

In personality traits, prematurely born children compared with full-terms are more frequently dependent on their mothers, less self-reliant and somewhat less adequate in their early social responses. One follow-up study (22 children whose ages ranged from 8 to 18 years when examined) of prematures of birth weight up to 1820 grams (4 pounds) found through the use of personality tests and interviews that one-half had made unsatisfactory or below average personal adjustment (Howard and Worrell, 1952). Some were of the submissive, passive type while others showed unusual aggressive tendencies. Several of the children had difficulty in utilizing their abilities. The authors offer as contributing factors: prematurity, overprotection by parents, poor physical endowment and, perhaps, rigid postnatal care. Thus, prematurity offers a hazard which many children overcome satisfactorily (Dunham, 1955).

INFLUENCE OF ILLNESS ON THE PATTERN OF GROWTH

Acute Illness. Whether or not frequent illnesses affect growth is not yet clear. Studies in the 1930's and 1940's gave evidence of no significant differences in the growth in size of children who had had frequent illnesses and those who had been relatively free from illness. One recent study of preschool children showed a small but definite decrease in the rate of growth in height but not in skeletal maturation during years in which illness was recorded (Hewitt, 1955).

Severe illnesses may produce metabolic disturbances which can be registered in children's bodies. Transverse lines may appear on certain long bones, indicating that normal growth has been interrupted (Greulich, 1959). Some children after a severe illness will show bone scars; others of comparable age and with an illness of the same severity will show none. The reasons for these different physiological responses are still unknown.

The absence of scars does not necessarily mean that a recent illness has not had an adverse effect upon a child. However, the presence of such scars would indicate that it is highly probable that it had done so.

Prolonged illness may adversely affect muscles since, during illness, they lose some of their tone and tend to become flabby. If the muscles are not given an opportunity to regain firmness, fatigue and its accompanying poor posture may result. This effect upon posture may be temporary or may lead to habitually poor body balance. Long and even permanent effect upon posture may result from diseases which directly affect bones or muscles as, for example, rickets and infantile paralysis.

An illness may produce some degree of anemia. Some of the fatigue noted after a child has been sick may be due in part to a lowered hemoglobin count.

Genuine recovery from illness, therefore, means not only the disappearance of the symptoms of the particular disease but also a return to the usual state of positive health. Hence a gradual, rather than a sudden, return to normal activities is desirable. Often a child returns to school before his bones, blood and muscles have recovered. If a teacher or parent is not aware of the fact that the child after illness is not up to par physically, that he lacks his usual reserve of energy and, therefore, tires more easily, too much may be demanded in attempting to help the child to catch up with his class in school.

Certain disease may leave characteristic aftereffects (sequelae): rheumatic fever, for example, leaving a damaged heart; scarlet fever, damaged kidneys or deafness; poliomyelitis, a paralysis; and encephalitis, damage to the brain. Little other than physical therapy can be done to modify these handicaps except to help the child to adjust himself to them. The real effort of society, however, should be placed on prevention of these diseases, as has been demonstrated recently with poliomyelitis, and on early and adequate treatment whenever they occur.

Emotional Significance. Illness may have many meanings to children. These meanings will differ from child to child and for the same child at different developmental levels. For children who must be hospitalized the additional strain of absence from home and family, and the strangeness of the hospital and the persons giving care may create additional anxieties and fears.

Schaffer and Callender (1959) found that children who are hospitalized before they are 28 weeks old accept hospital routines and separation from the mother, whereas children hospitalized after 28 weeks of age show striking symptom patterns of distress and refusal to accept normal hospital care.

Children who are closely attached to their parents appear to be more disturbed by hospitalization than do children who do not have this kind of dependence. Increasing numbers of children's hospitals are making provision for the mother to be with her child during the acute phases of an illness. Robertson (1962) feels that daily visiting by the mother is not enough and recommends that the mother be allowed to live in. He bases his opinion on a compilation of letters from parents and upon the Platt Report on the Welfare of Children in Hospitals. Erikson (1958) urges alertness to signs of anxiety in hospitalized children and suggests that the child should have procedures done *with* him instead of *to* him and should be given opportunity to express his feelings about being hospitalized.

An illness under any circumstances is strange and often poorly understood by a child. He may be not only physically uncomfortable but also con-

fused; he may be anxious and fearful. He may conceive of this happening as punishment, especially if parents have related the illness to some shortcoming of the child. He may revert to earlier social and emotional behavior; he may react rebelliously; he may enjoy being sick because of the attention he receives. On the other hand, a child may grow in emotional maturity because of the experience. Such a constructive response depends upon the child's emotional stability and his relationship with his parents. The meaning of illness to an individual child depends upon his inner resources, the understanding and resourcefulness of adults and the kind of care he receives (Gofmann, 1957).

Effect on Later Behavior. Many children do not "bounce back" promptly, emotionally and behaviorally, after an illness. A child may have a so-called emotional, as well as physical, convalescence. He may expect more adult attention and solicitude than formerly. This expectation coupled with a tendency to fatigue may result in occasional temper tantrums, in his being easily discouraged or in overaggressiveness. Parents and teachers who appreciate the origin of such behavior can help the child to grow out of it. In cases of long illness teachers have the added responsibility of helping the child to adjust to school after a long absence and possible loss of work, accumulating school retardation and accumulating loss of confidence. Pressure to make up back work can be withheld until the child is obviously physically able to do it. Teachers also can smooth the way for the child returning to school by preparing his classmates for his return.

An eating problem may emerge from a period of illness. Lack of appetite creates a temporary disinterest in food, and parental concern may lead to urging, cajoling, and even forcing the child to eat. After recovery there may be a lag in the return of appetite, and the return to normal eating habits is likely to be slow. The time required for recovery of appetite depends to a great extent upon the attitude of the parents during the child's illness as well as upon the speed of convalescence.

Indications of the Onset of Illness. Not only is it important to protect a child after illness, it is also important to recognize the onset of illness in order to protect the sick child, as well as to avoid exposing other children in the group to any infection. The onset of illness can generally be detected early by careful observation. A sudden lack of interest in work or play, disinterest in food, fussiness, increased irritability and restless sleep all point to possible imminent sickness.

Influence of Chronic Disease on Growth. Children may suffer from chronic disease, as, for example, in the nose, throat, mouth and ears, or from infection with parasites, as in hookworm. Rheumatic heart disease and diabetes are two of the chronic diseases that present real problems to the school-age child and adolescent.

RHEUMATIC FEVER. Rheumatic fever, the onset of which is most common between 5 and 15 years and has a high chance of recurrence, interferes with the normal life of a child because of possible damage done to the heart and the care that needs to be taken to prevent recurrences. With proper early care recurrent attacks can be prevented, growth can be satisfactory, little or no heart damage will result, and the individual can live a normal life with certain minor restrictions taken as preventive measures against further infections. On the other hand, many children acquire a chronic heart disability which may or may not interfere with growth but which definitely limits physical activities.

DIABETES. Studies show that es-

sentially normal growth and maturation may be anticipated if the diabetes is well controlled (Jackson, 1950). Children in whom the disease is well controlled tend to grow better, and girls to begin to menstruate normally; children in whom the disease is not well controlled grow more slowly, and girls menstruate later. Figure 16 shows the growth curves of two boys, both with severe diabetes but one with good control and the other with poor control. The one with good control has a curve above the average in height and weight. The boy with poor control has retarded growth in both height and weight. Degenerative changes in eyes and blood vessels frequently accompany long standing diabetes (Talbot, 1952). The level of control as well as the duration of the disease is an important factor influ-

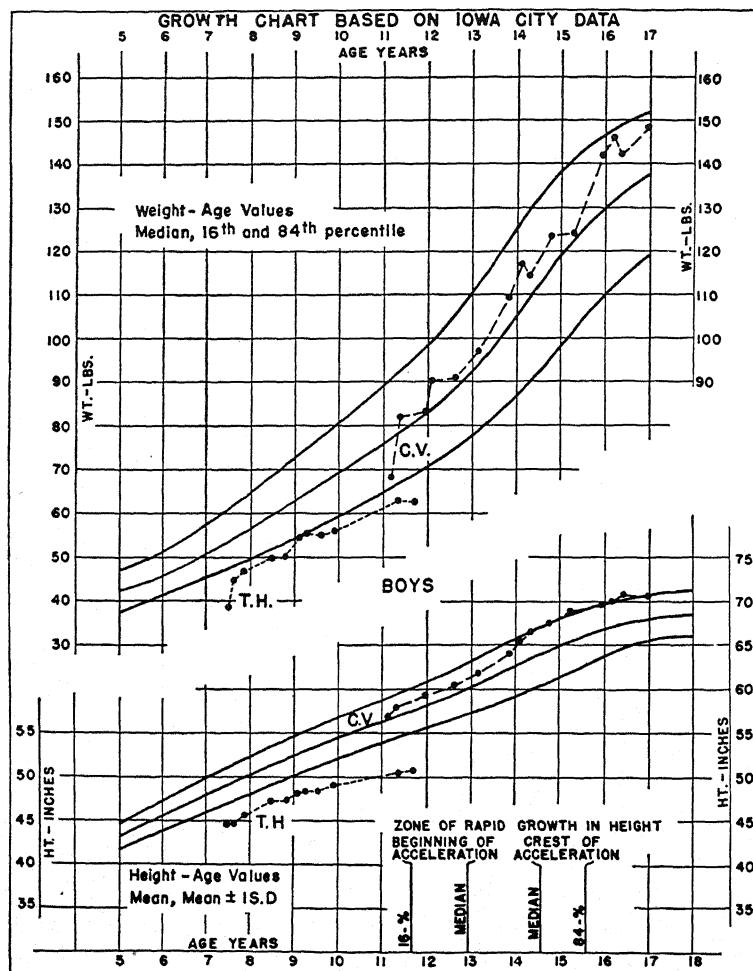



FIGURE 16. The growth curve of C. V. was selected to demonstrate the satisfactory growth in height and weight of a boy with moderately severe diabetes kept under excellent control. The growth chart of T. H. illustrates the unsatisfactory growth in height of a child with moderately severe disease under poor diabetic control. (Jackson, R. L., and Kelly, H. G.: Journal of Pediatrics, 29:316-328, 1946.)

encing degenerative changes; good control will delay and possibly prevent such changes (Joos, 1957). Thus, careful medical supervision and dietary control are extremely important for the diabetic child.

Emotional Implications of Chronic Diseases. Chronic diseases such as rheumatic fever with its recurrent nature, diabetes and disabilities arising from infantile paralysis may interfere with the steady progress of personality development and emotional stability (Freed, 1953). Restrictions may hamper growth of independence and the transfer of emotional attachment from parents to peers. Being different from others either in abilities, limited activities or habits of eating is difficult for many children to accept. Boys with rheumatic hearts may have difficulty in accepting themselves in the masculine role since masculinity represents physical ability to deal aggressively with others and this is restricted for them. Children may continue to carry with them fears and anxieties about their present and future health. They may have acquired the habit of overdependence and oversolicitude about themselves, resulting in overcautiousness or perhaps capitalization on their disability, thus "trading on weakness." On the other hand, they may refuse to follow the prescribed regimen and become "whistlers in the dark," trying to keep up their own courage by an appearance of great confidence.

Different children respond to similar disabilities in different ways. Some are able to accept life at a slower tempo, to select comfortably those activities that are compatible with their physical abilities, to capitalize on their assets and to relate themselves well to their peers and to adults. Some may be rebellious. Others may conceive of the illness as punishment, and hence develop exaggerated feelings of guilt. The response of a particular child will be influenced by his emotional stability and that of his parents and also his relationships with his parents prior to his disability. It will also be influenced by his parents' and teachers' acceptance of him and the support they can give him in his life at home and in school. Parents and teachers, therefore, need to be understanding, accepting, supportive and realistically encouraging.

PHYSICAL DEFECTS

Physical defects may be the result of faulty development, of accident, or of disease. Whatever their origin, they may have little or no effect upon a child's development or they may affect development a great deal. Children with physical limitations are like other children in their basic needs and in many aspects of their lives. Such similarities should not be lost sight of in concern for the disability. Much will depend upon the nature of the defect, its severity and the attitude of the child himself, his parents and his peers. Each defect places a specific limitation upon the child. That limitation may be severe enough to interfere profoundly with his activity as, for example, cerebral palsy. It may influence his social development by preventing him from developing useful skills, by setting up a barrier between himself and other children because he differs physically or because it prevents his becoming independent. Emotionally he may be unable to satisfy his needs for security, affection and success and thus be driven to compensate for the lack either by withdrawing or by showing aggressive behavior. A defect may also interfere with his achievement at school (Myerson, 1955).

Some parents and teachers may try to ignore the child's difference and expect him to carry on without privi-

leges. Others may overprotect the child and by so doing create in him a feeling of self-pity and thus prevent his growing in desirable personality traits. Some, however, are able to encourage and assist the child to utilize all of his abilities. They can also see that psychological needs are satisfied and thus help these children to become successful and happy members of society.

Visual Defects. A visual defect may range from defective vision, which can be corrected by glasses, through partial sightedness to total blindness.

Because of the lack of the visual sense, the blind child has limitations in the range and variety of experiences, limitations in the ability to get about and limitations in the control of the environment (Lowenfeld, 1955). Hence, it is not surprising that they show less variability and adaptability in their approach to situations than normal children, that they may be fearful, insecure, dependent and sometimes frustrated; that they may be docile, less active and show less initiative than children who can see; that they may be slow in acquiring gross motor skills and in language development.

Intellectually, as measured by mental tests, blind children are found at all levels, below average, average and above, with more children below the normal range than in the gifted range (Hayes, 1952). Cowen et al. (1961) made a carefully structured study of adjustment to visual disability in a group of visually disabled adolescents as contrasted with a normally sighted control group. They found that the visually disabled subjects, as measured by several tests, were "remarkably comparable to their sighted peers."

Visual defect children, given adequate opportunity for an education fitted to their needs, display average intelligence (average IQ's are 101.8), but the children with the more severe handicaps show a higher verbal IQ and a lower performance IQ (Klauer, 1962).

Whether a blind child achieves his potential for development, enjoys life and makes satisfactory personal and social adjustments will depend upon (1) the attitude toward blindness on the part of the family and community, (2) the child's relationships with his family, (3) parents' understanding and their efforts to provide him with meaningful experiences and, (4) the school's ability to furnish adaptations that will facilitate his learning. Good development and adjustment have been demonstrated in a 5-year longitudinal study of the early years of a group of blind children, predominantly prematures with retrolental fibroplasia. When ready to enter school they were independent, freely functioning individuals who compared favorably with sighted children in all their adaptations. Those followed through 6 years of age were doing well in school.

The partially seeing child is, in reality, one who deviates only slightly from the so-called normal and has, therefore, problems similar in kind to those who have other relatively slight defects. Children with unrecognized visual defects may demonstrate behavior patterns which, if properly understood, would tell us that the eyesight is defective.

Deafness. The terms "deaf" and "hard of hearing" are generally defined in terms of functional auditory capacity. The deaf are those in whom the sense of hearing is nonfunctional. They are classified as the congenitally deaf and the adventitiously deaf. The latter are those who have been born with normal hearing but have become deaf through accident or illness. The hard of hearing are those in whom the

sense of hearing, although defective, is functional, with or without a hearing aid.

Hearing loss in young children often passes unnoticed. Parents and teachers are significantly inferior in identifying hearing loss in schoolchildren (Rodman et al., 1959). The deaf or hard of hearing child, because of limitations in communication, is often misunderstood. His defect is not always recognized and, therefore, his behavior is misinterpreted. He may be mistaken for a child with poor mental ability. He may then be neglected and become withdrawn. Because he does not pay attention, he may be marked as indifferent, stubborn, careless and impolite. The very nature of the deafness may, in some cases, make adults unduly critical of the child. A child may hear better at one time than another. Some voices may be more distinct than others. It can be easy for any other than a keenly observant and well-informed person to credit such a child's variable response to deficiencies in character. Deaf children can be misunderstood, also, because they may misinterpret situations. Because they fail to hear all the facts, their conclusions and hence their behavior may seem strange to those who, because they can hear, can base their judgment on all the facts. Such children are often considered "dumb" or "queer." It becomes important, then, to be able to detect the signs of deafness.

As a group the deaf tend to be inattentive, imperfect in speech, bewildered and baffled in expression, sensitive and aloof. Meyerson (1955), in reviewing the studies of deaf children, states that most samples of deaf and hard of hearing children have shown lower than average scores on measurements of intelligence, educational achievement and personality. However, deafness, per se, may not be the cause of these variations from average but rather variables associated with the specific deafness of a child. Such factors would include accompanying defects, the specific disease producing the deafness, the background of the child, including endowment and environment, and lack of conditions conducive to learning for the deaf. Whether a child with defective hearing becomes a self-respecting, useful, self-supporting member of society or a braggart with underlying dependency and insecurity, or a defeatist who considers deafness as an affliction rather than a handicap depends upon home, school and society. Parents and teachers carry the heaviest burden of making it possible for a deaf child to live comfortably in the psychological world of hearing. As in the case of the visually handicapped, the adjustment of the child with impaired hearing will depend not only on the physical handicap but also on the potentialities for development and experience.

Crippling without Neurological Damage. Children with orthopedic handicaps without neurological damage are those who have impaired use of body, legs, arms in varying degrees from such diverse causes as disturbances in development before birth, accidents and certain diseases. They are children whose defects interfere with the normal use of bones, muscles and joints, a fact which the child must face and integrate into his living.

Basically, the crippled child has the same developmental processes and adjustment problems as other children. But he must face the fact that he is conspicuously different from others. The awareness of this difference can color his feelings and behavior. He may feel inferior to others, insecure, ashamed. These feelings may be increased by rejection and even ridicule

by his peers. Because of his feeling of being different he may become withdrawn or aggressive or attempt to capitalize on his defect. He may be fearful, anxious. The crippled child faces frustrations. He wants to be treated like others. He has a strong need for independence which he may not be able to gratify. He needs to feel equal to his peers and so feels more at ease with other handicapped children than with normal children (Fig. 17). His disability may interfere with his personal aspirations (Cruickshank, 1963).

Adolescent boys may experience difficulty in fitting into the masculine role assigned by our culture. Such boys show less freedom in the expression of externally directed feelings of aggression and dependency than do girls or nondisabled adolescents. This may be due to the fact that the adolescent boy is unable to fulfill his masculine role of being aggressive and independent while the girl does not have such a conflict. How successfully the crippled child has his needs and aspirations gratified and makes a place for himself in his peer group and society depend, as in other types of disability, upon his endowment in other areas, the use to which it is put and the support and guidance of adults, namely his family, teachers and others with whom he comes in contact.

Neurologically Damaged Children. Injury, either through accident or disease, to a previously normal brain may produce brain damage with consequent permanent disability, such as mental retardation, cerebral palsy, organic epilepsy, or a characteristic

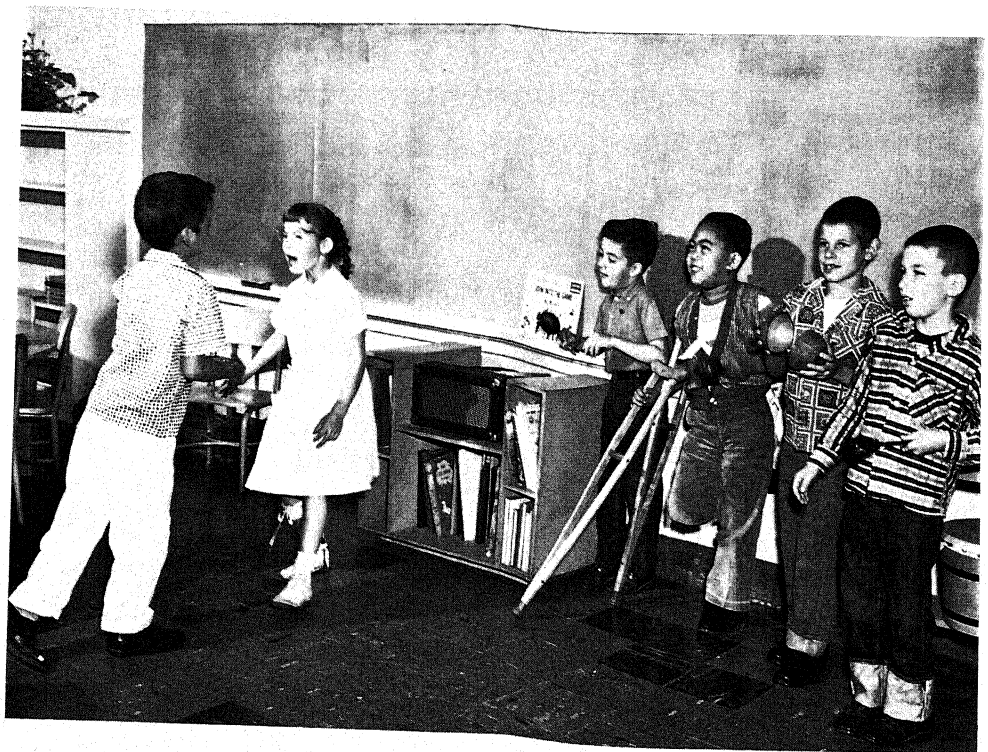



FIGURE 17. Handicapped children feel at home with other handicapped children. (Courtesy Los Angeles Public Schools.)

type of behavior. These disabilities may occur separately or in combination. They may be mild or severe. The effect on intelligence may extend throughout the whole range of intellectual ability (Masland et al., 1958). Defects in the neuromuscular system may be present, as in the case of cerebral palsy; recurrent convulsive seizures may be a characteristic, as in epilepsy; or the injury may be reflected in a group of behavior characteristics. Thus brain-damaged children are not a homogeneous group. The functional consequence depends upon the location and extent of the injury and the level of maturation at the time of the injury.

Behavior difficulties that are the result of brain damage may be confused with those of a child who is emotionally disturbed for some other reason. This type of brain-injured child has been called a "displaced person" whose behavior is an enigma to others. His behavior reflects the differences in the manner in which his brain functions. He may perceive things differently. Instead of seeing the whole at once he sees a part and then the whole. For example, he may concentrate on a button instead of the coat. He may think differently and thus misinterpret what is happening. He may be bewildered by his surroundings because he is unable to comprehend them. He may perseverate (repetition of an activity after it has ceased to have meaning). Verbalization may be mere reiteration of something he has heard without understanding its meaning. He tends to pay attention to everything, both the essential and the nonessential. Thus, he is distracted by the many stimuli about him and appears to be unable to concentrate.

Personality development may be impeded, especially if the injury comes very early so that the early foundation of personality development, the interaction of mother and child, is disturbed (Gerard, 1957).

He is impulsive, hyperactive, irritable, distractable, unpredictable in his behavior and has difficulty in abstract thinking. These characteristics reflect the disorganization and weakened controls that are the basis for his behavior (Bradley, 1957). In addition, other aspects of his behavior reflect feelings of inadequacy, the special problems that his handicap creates, and his reactions to the attitudes and behavior of his peers and adults. These are manifested in anxiety, emotional immaturity, compensatory mechanisms, school failure and general personality patterns. The kind of person he becomes, as has been said about other physically handicapped children, depends largely on the attitudes of those who deal with him and the success he achieves in his daily life and in his social contacts.

CEREBRAL PALSY. In the child with *cerebral palsy* the injury has affected motor control and thus the child lives in a constricted environment because of the lack of mobility and of limitations in self-expression. He is, therefore, classified among the crippled children.

As a group, children with cerebral palsy were found in a study in Scotland to be significantly below normal in all body measurements recorded except body weight, in which the differences from normal children were of slight significance. There was retardation of motor development in all forms of cerebral palsy (Mitchell, 1961). It was found that the incidence of cerebral palsy in Scotland was 2.04 per 1000 births. Of 240 cases studied, 54 per cent were males, 46 per cent females; 43 per cent were mild, 35 per cent moderate, and 22 per cent severe.

Forty-seven per cent of cerebral palsied children also had strabismus;

23 per cent were classified as "deaf"; the mean IQ of 223 cases was 67.7, standard deviation 34.1. IQ generally decreased as severity of physical handicap increased, although there were individual exceptions. Family acceptance of the handicap bore little relation to age or degree of disability or to family intelligence. The incidence of mental disorder, epilepsy and cerebral palsy in relatives of patients in this study was "not significant" (Henderson, 1961).

Hickey (1962) found that among the 60 cerebral palsied children he studied less than half of them (ages 4½ to 16 years) were fluent enough in reading ability to read for pleasure and information, some of them having been 10 or 11 years old before learning to read.

As in other types of brain-damaged children, cerebral palsy children as a group vary in their abilities because of differences in the extent of the injury, the location of the injury and the potential for development. Some of these children are bright, some are of average intelligence, some dull. However, more are found in the subnormal than in the average and above average ranges. Heilman (1952) summarizing five studies, found that 25 per cent of the children were average and above, 30 per cent borderline and 45 per cent mentally defective. Such children may have difficulties in perception and in generalized concept formation (Masland et al., 1958).

Basically, because they are different and must adapt themselves to their differences in a world built around normal children, they face hazards to a good personal adjustment similar to those that confront other physically handicapped children.

EPILEPSY. Epilepsy, meaning "seizure," is a symptom of many diseases of multiple origin, including brain damage. Its manifestation may range from emotional outbursts to severe convulsions. It may have a genetic component (Ounstead, 1955). The genetic factor is attributed to inherited brain wave patterns which can be studied through the use of the electroencephalogram. It is reported that approximately four-fifths of the children subject to epileptic seizures show abnormalities of brain waves. The types of brain waves vary with the type of disturbance (Lennox, 1954). Children with epilepsy as an accompaniment of brain damage are likely to have a more serious disability. The occurrence of seizures bears a close relationship to certain emotional and mental stresses. Therefore, good mental health for an epileptic is an aid in reducing the frequency of seizures.

The effect of this disease upon the emotions and behavior of a child will depend upon its severity, medical supervision and the attitudes and behavior of those at home, at school and in the community. The outlook for most epileptics is hopeful. With competent medical treatment a great majority of these children can be protected from or substantially relieved of seizures. Unfortunately, there is still need to remove misconceptions from the minds of the public and to guide them into understanding and acceptance of these children.

Intellectually, children with epilepsy are not significantly different from others in the community, except for the brain-injured child who generally does less well intellectually than the epileptic without brain injury (Broida, 1955).

There is no so-called epileptic personality. However, the presence of the disease may modify emotional and personality development.

The problems that the epileptic faces include, of course, those which center around his seizures, that is, how he feels about them and how he can manage himself when they occur. Fear and anxiety about seizures are

school progress and adjustment. An allergy is one of them. Manifested as a disturbance of the skin, nose, bronchial tract or gastrointestinal tract, an allergy may have a psychic as well as a physical component. Emotional stress may precipitate, aggravate or prolong the allergic reaction. It has been suggested that lack of a warm mother-child relationship may be a factor (Miller and Baruch, 1950). Reactions such as a stuffy nose or itching skin can be annoying and disturbing to children; asthmatic reactions can be frightening. There is apparently no allergy personality which differentiates allergic children from others. The anxiety, insecurity and dependency that have been noted in allergic children have also been found to the same extent in their siblings (Neuhaus, 1958). However, in contrast to nonallergics, allergic children have been shown to be more prone to hide and deny hostility and to direct any hostility inwardly toward themselves (Miller and Baruch, 1950).

Knowing that a child is allergic helps a teacher or parent to understand and interpret his behavior. For example, the adult can help the child who must eliminate a particular food or foods from his diet to accept this difference naturally and not become oversensitive or use his allergy as an excuse for more attention.

In adolescence such difficulties as *acne* and *malocclusion* (poor alignment of teeth) may produce acute self-consciousness and interfere with a child's adjustment in the social group. Attractive appearance is an opening wedge in the peer group, especially for girls. A blotchy complexion, protruding teeth, or a receding jaw removes the psychological support which satisfaction in one's appearance gives to youth.

Another physical condition, obesity, has been discussed in Chapter 1. The effect of nutrition on progress in school will be discussed in Chapter 4.

Radiation. Radiation as it can affect the health and development of children and adults is receiving increasing attention since the atomic bomb was dropped on Hiroshima and Nagasaki during World War II. There has been extensive study of fallout in connection with the testing of nuclear weapons. The sources of radiation include background radiation from natural sources, nuclear explosions including distant fallout and long-term contamination of air and water, medical and dental x-rays, occupational radiation and miscellaneous sources such as shoe fitting machines, luminous-dialed wrist watches and various children's "atomic age" toys (Robinow and Silverman, 1957). The amount of radiation an individual acquires is cumulative and irreversible, children are more sensitive to it than are adults (Glass, 1956).

Radiation hazards have been studied by means of animal experimentation, by observations of the effect of the bombing at Hiroshima and Nagasaki on those who were exposed and by clinical observations of those who have been exposed to radiation either occupationally or therapeutically (Plummer, 1952).

EFFECTS OF IONIZING RADIATIONS ON BEHAVIOR. Garcia and Buchwald (1964) found that extremely low doses of ionizing radiation operate as complex stimuli with both cue and aversive properties. Recent studies have demonstrated that effects can be obtained with total doses of less than 1 roentgen. The authors say that this may explain some of the conflicting results obtained in behavioral and electroencephalographic tests for effects of radiation exposure recently appearing in the literature.

EFFECT OF RADIATION ON GROWTH. Radiation affects development. Studies in Hiroshima and Nagasaki demonstrate how fetal development may be affected (Yamazaki, 1954). The infants of Nagasaki women who showed major radiation signs from atomic bombing had a higher morbidity and mortality rate than those of mothers who were beyond the radiation center. Fetal mortality was 23.3 per cent in contrast to 2.7 per cent among the controls; neonatal and infant mortality was 26.1 per cent, with controls 3.6 per cent; cases of mental retardation were 25 per cent and 3 per cent. In the Hiroshima study of anomalies occurring in children exposed in utero to the atomic bomb, it was concluded that central nervous system defects can be produced in the fetus by atomic bomb radiation, provided that exposure occurs approximately within 1200 meters of the explosion center. Seven of 11 children of mothers within 1200 meters had microcephaly with mental retardation. Nine of these 11 children had head circumferences that fell below 1 standard deviation of the mean of Japanese children.

Greulich et al. (1953), in a study of height, weight and skeletal maturation of children exposed to the bomb in Hiroshima and Nagasaki, found these children to be somewhat retarded in growth and maturation when compared with controls living in Kure and with other Japanese children of the early postwar period. In comparison with Kure children, the Hiroshima boys in 1947 were significantly shorter and lighter than the Kure boys. Corresponding differences in girls were not significant. In 1949 Hiroshima boys were significantly shorter but not significantly lighter. Girls showed no significant differences. In 1950 Hiroshima boys were still shorter but not significantly more so than Kure boys. No great difference was found in girls. In Nagasaki the difference between the exposed children, who were shorter and lighter, and the controls was not significant. In skeletal maturation the difference between Hiroshima and Kure boys was significant, as was the difference between the exposed and controls in Nagasaki. In both instances, however, the differences for girls were not significant. The effect on the boys was greater than that on the girls. Some of the retardation was still evident five and one-half years after the bombing. These effects cannot be attributed solely to radiation, however, since the effect of radiation cannot be separated from that of the accompanying conditions, including physical injuries, psychological trauma and the disrupted economy with attendant poverty and severe malnutrition.

In the United States strontium-90 concentration in human bone resulting from nuclear testing fallout continued to increase in 1958 and 1959 but probably reached a maximum in 1960. In 1960 the maximum concentration was found in 1 year olds. The peak strontium concentration in food eaten by human beings was passed in 1959; the peak in bones in 1960 (Kulp et al., 1960).

The concentrations of strontium-90 in decidious teeth of children born in St. Louis between 1949 and 1957 were found to be in accord with estimated bone levels (Rosenthal et al., 1963).

Nuclear explosions in Utah during July and August, 1962, caused an intake of about 58,000 picocuries of I^{131} and a peak intake of 800,000 picocuries of I^{131} by Utah residents consuming one liter of milk per day. Corresponding infant thyroid doses were about 1 rad (average) and 14 rad (peak) (Pendelton et al., 1963).

Radiation affects genes. This is associated with the increase in mutations, the majority of which are considered harmful. Thus, by increasing mutations, hereditary defects can be increased in later generations.

Radiation injures tissues, thus producing malfunction and disease such as decrease in red and white blood cells and damage to red bone marrow, which may lead to anemia and leukemia. Incidence of leukemia in Hiroshima and Nagasaki was about four times that of a control population. The interval between the explosion and first appearance of leukemia was approximately 6 years (Medical Research Council, 1956). (Leukemia deaths have been shown to occur nine times more frequently among radiologists than other American physicians [Peller and Pick, 1952].) Strontium-90 replaces calcium in bone. Among other possible damages are cancer, cataracts, loss of fertility, shortening of life span, sterility.

No limits of safety to exposures to radiation have been determined. It is well to view all sources of radiation as suspect and thus control the amount of radiation as much as possible. This does not suggest elimination of all man-made sources but urges study and evaluation of them and all possible precaution in their use. This would include elimination of fluoroscopic shoe fitting machines and the like, careful scrutiny of the use of x-ray for diagnostic and therapeutic purposes, protection in such situations by use of the best equipment and techniques, especially for the gonads, for the protection of workers in occupations where they may be exposed to radiation or radioactive materials and watching for radioactive pollution of air, water and food from radioactive fallout and from industrial waste. In addition, it is suggested that for each individual a record of exposures be kept so that his physician knows at all times his accumulated load (Price, 1958). The British and American reports on radiation hazards published in 1956 stated that, at the rate of exposure at that time, the amount of fallout from explosions of nuclear weapons was negligible.

EXPERIENCES TO VITALIZE CLASSWORK

1. Discuss the practical difference that it might make to know about heredity in evaluating a particular child.
2. Find out if there is a children's hospital or an endocrine clinic in your community, or if there is an endocrinologic service in your public school. If possible, visit one of them and report for class discussion some of the cases which you saw.
3. Recall any instance in your own development when you were pushed to learn beyond your "readiness." What effect did this have upon you?
4. Find what you can in the current literature (since 1960) about the effect of illnesses upon development.
5. What can you find in the current literature (since 1960) about the effect of special sensory defects upon growth and development?
6. Locate a child who is handicapped physically (eyes, ears, crippled, etc.). How does his defect affect his learning, his attitudes and his behavior?
7. Look through current newspapers and magazines for the most recent information on radiation.

SELECTED READINGS

Baker, H. J.: Introduction to Exceptional Children. 3rd ed. New York, The Macmillan Co., 1959. Characteristics of exceptional children, their education and problems.

Breckenridge, M. E., and Murphy, M. N.: The Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Co., 1963, Chapter Five, Physical and Psychological Needs: Eating Habits, Elimination.

Fiedler, M. F.: Deaf Children in a Hearing World. Their Education and Adjustment. New York, The Ronald Press Co., 1952.

Lennox, W. G.: The Social and Emotional Problems of the Epileptic Child and His Family. *In* Haimowitz, M. L., and Haimowitz, N. R.: Human Development: Selected Readings. New York, Thomas Y. Crowell Co., 1960, pp. 458-467.

Lowenfeld, B.: Our Blind Children. Springfield, Ill., Charles C Thomas, 1956.

Plank, E. N.: Working with Children in Hospitals. Cleveland, Western Reserve University Press, 1962. How to meet emotional needs of hospitalized children.

Schoenbohm, W. B.: Planning and Operating Facilities for Crippled Children. Springfield, Ill., Charles C Thomas, 1962.

Spock, B.: The Common Sense Book of Baby and Child Care. 2nd ed. New York, Duell, Sloan & Pearce, Inc., 1957.

Stuart, H. C., and Prugh, D. G. (ed.): The Healthy Child: His Physical, Psychological and Social Development. Cambridge, Harvard University Press, 1962. Chapter V, Nutrition: The Infant; The School Child; The Adolescent. Pp. 220-237, Contributions of infant feeding experiences to personality development. Pp. 105-106, 110-111, 210, 246, 257-261, 270, toilet training.

Tanner, J. M.: Growth at Adolescence. 2nd ed. Springfield, Ill., Charles C Thomas, 1962.

THE NATURE OF EMOTIONS

An emotion represents affective feeling tones. It is characterized by inner adjustment, conditioned by the functioning of the autonomic nervous system, expressed overtly through behavior responses peculiar to the particular emotional state expected, and aroused by the interaction between an external stimulus situation and the inner mental status (Crow and Crow, 1961). Webster's Dictionary (1963) defines an emotion as "the stirred-up state of the individual, as represented by a combination of factors." An individual is not born with set patterns of emotional behavior. The attitudes and feelings of an individual at any given moment have a profound effect upon the way he may react to any given situation. In emotional states the entire body participates in the reactions that accompany the experience.

There is a close relationship between the stimulus that arouses the emotion and the emotion itself. A particular stimulus arouses one emotion at a time; it cannot arouse two opposing emotions at the same time. Any given stimulus may arouse an emotion at one time, but not at another, even though the stimulus conditions appear to be similar both times. A given stimulus may rouse different emotions at different times.

Interrelation of Physical and Emotional Factors. Just as the physical well-being of the child is a primary

factor in the quality of his physical growth, so his emotional well-being is a primary factor in his mental and personality development. As we have already seen, however, the relationship is not only one of physical factors upon physical growth and of emotional factors upon psychological growth. There is also a cross relationship: physical factors influence psychological growth, and emotional factors influence physical growth, as can be seen in Figure 18.

FIGURE 18. The cross relationship between physical and emotional factors and physical and psychological growth.

In the same way that the physical environment of climate, food, rest, exercise, exposure to strain and fatigue and to disease determine the rate and the pattern of the child's physical growth, so the emotional climate, love or the lack of it, good or poor discipline, adequate or inadequate intellectual growth experiences, psychological strains or satisfactions, and other psychological factors, will determine the rate and pattern of his intellectual and personality growth. In addition to this, the rate and pattern of his physical growth will influence the rate and pattern of his psychological growth and vice versa. In general, then, all of the physical and psychological factors that influence either type of growth will influence both.

In Chapter 2 we have discussed the effect of physical well-being or defect upon intellectual functioning and successful emotional adjustment for children. There is equally impressive evidence that the converse is true, namely, that emotional state, the adequacy or inadequacy of life adjustment, and the attitudes and feelings that result from such adjustment or lack of it, affect physical well-being (Harsh and Schricke, 1959).

We can understand this better if we know how, under emotional stress, the autonomic nervous system acts to speed pulse and respiration, to retard digestion, to tense smooth muscles throughout the body, and to impede clear thinking (Martin, 1960). Severe fear, anger, or even love, too exciting thrills, too discouraging depression all set off secretion of epinephrine, popularly called adrenaline, by action in the autonomic nervous system. This inhibits the flow of the digestive juices, redistributes the blood, races the pulse, speeds breathing, and—although the body is thus made ready for vigorous physical action—inhibits clear thinking and fine motor coordination. Knowing this, we can understand why we have no appetite when intensely worried, why we cannot think clearly when nervous and tense, and why any form of intense emotion is exhausting.

One of the body's important attributes, adaptation, is called into service at time of emotional stress. Through its adaptation mechanisms the body is able to handle stressful situations without seriously disturbing its activities. Stress of various kinds is ever-present in day-to-day living. Stress may be slight and transient, it may be intense and brief; it may be slight and prolonged or intense and prolonged. If it is carried to a point beyond the body's ability to adapt to it, harmful physiological

reactions occur which may eventually lead to disease (Engel, 1963).

Individuals differ in their response to stress—some react vigorously, some less intensely, some in one way, some in another. Some, who are unable to express an emotion freely, may express it through a physiological function as, for example, by overeating. Some may make an inappropriate use of an adaptive reaction, such as a headache before an important event or nausea at school time. Some individuals react to stress by becoming irritable or anxious or by withdrawing within themselves so that they do not respond normally to outer stimuli. Other more fortunate individuals have been helped to learn how to meet stress by changing the circumstances that produce it or, if this is not possible, by finding constructive ways of relieving the tension in work or play. An individual's reaction to stress is affected by hereditary predispositions, past experiences and environmental conditions.

Importance of Satisfactions and Strains. Any set of conditions which drives a child beyond his natural functioning level inevitably produces a strain. So also will any set of conditions which continually frustrates basic needs and drives. This will be discussed later. One of the most important considerations in evaluating any given child's growth and functioning is the consideration of the satisfactions and of the strains he experiences. Satisfactions tend to release tension and to promote growth. Strains tend to produce tension and to impede growth and functioning. If the child, for example, is not in the proper grade for his mental ability, his physical strength and his social development, he will be subject to dissatisfactions and strains every day he is in school. Regardless of his ability, if his performance is not meeting the expectations of parents and teachers, he will react to this. If their expectations are soundly grounded upon his real physical, intellectual and social abilities, then he can and probably should be urged along. If, however, their expectations are beyond his natural capacities, he suffers strain not only at school but also at home.

It must also be emphasized that stress successfully coped with can just as often have a beneficial effect on development as stress unsuccessfully coped with may have a harmful or damaging effect (Engel, 1962). Spielberger (1962) found that a certain level of manifest anxiety appears to facilitate the academic performance of superior students in college.

Anxiety and Fear

Anxiety and fear are thought of by Levin and Baldwin (1959) as "being anticipatory to the events which during the organism's history have caused him pain."

Hunt (1960) suggests that, while conditioned fear is a reality, it is not the only basis for fear. Strong fear can be evoked by stimuli that are merely incongruous with expectations derived from past experience. Like stress successfully coped with, painful and varied stimuli early in development may help to inoculate children against such fears. For example, if a child experiences only an environment in which there is no fear, he learns to expect only a life that contains no fear. If, on the other hand, he experiences everyday reality (within, of course, a child's capacity to cope) he will be better prepared for coping in later years.

Anxiety is associated with dissatisfaction with self and others (Fay, 1957). When an individual is unable to make responses that lead to success, frustration is produced and anxiety is aroused.

Severe anxiety in childhood may affect emotional responses in adulthood. Kagan and Moss (1962) followed children from birth to 14 years, then studied them again in adulthood. Boys who showed evidence of intense physical harm anxiety during the preschool years were, as adults, anxious about sexuality, were uninvolved in traditional masculine activities, and were highly concerned with intellectual competence and status goals. Fear of harm during the first 10 years in girls, however, was not highly associated with any of the adult behavior that characterized the anxious boys.

Each age and kind of social organism produces its own types of anxieties (Bettelheim, 1960).

Infants, for example, fear unknown persons—a fear which reaches a peak between 12 and 15 months of age (Franus, 1962).

High anxiety and low anxiety groups are found in the third grade. The high anxiety group expresses more negative feelings than do low anxiety children in the same situation. The anxious child tends to be relatively more concrete in his descriptions than are nonanxious children (Barnard et al., 1961).

Intermediate grade boys who are highly anxious were found by Sutton-Smith and Rosenberg (1960) to be not only feminine but also immature. Girls highly anxious at this developmental level were found to be both masculine and above average in maturity level.

A study (Meisner, 1961) of 2000 high school boys in 1939, compared with a study of 1278 high school boys in 1959, indicated that there was a considerable *amount of anxiety in 1959,* but that significantly *less was found than in 1939.* Although the 1959 boy was more carefree than the 1939 boy, his areas of anxieties, worries and fears were much the same: sex, unpopularity, immoral activity, religion, vocation, and his future.

Anxiety over one's place in the gang or over some real or fancied difficulty with civil or school authorities may occupy a child's attention so that he cannot concentrate at school. It affects children in different ways as we see in Figure 19*A*, in which a familiar landmark is being demolished. We see the individual reactions of children in 19*B*, *C*, *D* and *E*. In less aggressive, less "outgoing" children, anxiety will impede appetite and interfere with sleep by making the child restless and by producing bad dreams. With more aggressive, "outgoing" children, the strain will probably show in irritability, explosiveness and difficult behavior. Any worry over parents, siblings or any other thing that is important to the child reflects in schoolwork and general behavior as well as in general physical well-being.

It was indicated in Chapter 1 that the physical changes of early adolescence are often accompanied by emotional stresses, particularly in the case of early-maturing girls and late-maturing boys. There is evidence that for adolescents there are, in addition to these stresses, the emotional tensions which accompany the problems of establishing independence from parents and of adjustment required in the establishment of new relationships with age-mates of both sexes. For girls the peak of this latter type of stress appears to occur between ages 14 and 16.

Adjustment to school is often an emotional strain. Kindergarten and first grade children frequently suffer from lack of appetite, sleep disturbances and loss of weight as a consequence of the tension of adjusting to the new requirements of school. In such instances the child's reaction is probably an indication that he is ill-prepared to make an adjustment

FIGURE 19*A*. A familiar landmark is being torn down. Children's reactions to this in Figures 19*B*, *C*, *D*, *E*. (Courtesy Georgia Latwick.)

required of all but the most exceptional children. Much can be gained for both child and parent, however, if the teacher understands the situation and, through patience and some temporary adjustment at school, helps the child to achieve the required adjustment on his part.

FIGURE 19*B–E.*

Part of the critical aspect of school adaptation is the readjustment required by separation of the child from his mother and from the familiar routines of the home. England's experience with evacuation of children during the Second World War showed that separation from home and the "sanctions of the home" produced more neuroses than were produced by actual bombing (Freud, A., 1943). Although school does not represent so vital a separation as does evacuation in wartime, it does represent for many children a sufficiently vital separation to be reflected in rest,

appetite and excretory incontinence.

Effect of Attitudes of Adults. In a study of high school boys and girls and their mothers and fathers, scores were obtained on four anxiety scales. The results showed that (a) only in the case of girls and their mothers were there consistent, positive correlations on all four scales; (b) anxiety scores of both boys and girls were much more related to mothers' than to fathers' anxiety scores; and (c) there is need for a study of family influences in the development of anxiety in children (Adams and Sarason, 1963).

Teachers and parents can help children most if they learn the emotional tension stage of each child. It is important to know how to arouse enthusiasm that does not spill over into tense excitement or neurotic fear of falling short of the mark; how to stimulate interest without too much fatigue. It is important also never to treat children in such a way as further to block thinking which is already blocked, or further to disturb motor behavior which is already imperfect. In other words, a quick sympathy with the child who cannot mobilize his thinking in speed drills, or who finds it impossible to read aloud before the large group, may possibly relax him enough to accomplish the end; sarcasm or ridicule can only intensify the original cause of such trouble.

Sarcasm or ridicule on the part of either teachers or parents belongs to the type of discipline which, along with physical violence, throws nearly all children into so emotional a state that the autonomic nervous system is set into action. Davitz (1958), in a comprehensive survey of research concerned with the behavior of children, says that punishment and rejection give rise to fear; fear promotes defensive reactions; and defensive reactions elicit further punishment. Thus, a vicious circle is set up (Fig. 20). No child, roused to emotion by violent

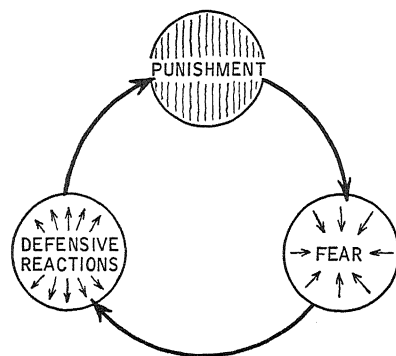



FIGURE 20. The vicious circle of punishment, fear and defensive reactions.

punishment or any other emotion-rousing method, can possibly think clearly or speak or write adequately, since among the autonomic by-products of the intense emotion are a blocking of thought and a disturbance of the motor controls, of which speaking and writing are two of the most delicate.

A further application of this principle is that intelligent discussion cannot progress when one or the other party to the discussion is blocked by emotion. Children who are terrified cannot think; therefore, they cannot explain themselves by stating a reasonable defense, nor can they absorb a lecture on behavior. Quiet friendliness between adult and child or between child and child opens the channel for intelligent discussion of the situation and provides the best possibility that the child will remember later what was said. Judgment is required on the part of the adult, of course. Some children, even when mischievous enough to get into trouble, require gentleness of approach for a really effective contact; others need considerable firmness. Abbe (1958), in a study of disturbed children, found that their mothers showed a higher incidence of restrictive and lax and overindulgent attitudes than did the mothers of chil-

dren who were making a normal adjustment. The background of any child who seems to require genuine harshness should be investigated to reveal what is wrong at home or in his neighborhood or with his previous handling in school.

THE INFLUENCE OF MOODS

Moods are pleasant or unpleasant states of mind that are less intense and that last longer than emotions. They are often a "hang-over" of emotions, although they may be the background for an exaggerated emotional response because they sensitize individuals to emotional stimuli. For example, a mood of depression may result from an emotional experience of defeat or grief. Moods are, of course, often associated with overfatigue, illness or other purely physical causes. In adolescent girls and mature women a mood of depression or of restlessness frequently accompanies certain aspects of the menstrual cycle. A depressive mood may make one cry over things that would ordinarily leave one almost unmoved; an irritable mood may make one explode into anger over a comparatively trivial incident.

Important factors in stabilizing moods are physical health and a fairly stabilized routine of living, especially for growing children. A well child is normally a happy child, although moods of explosiveness and negativism are considered "normal" at certain stages of growth, as we shall see later. Zest and interest are important to the mental and personality development of children; but overstimulation and an unstable, overexcitable or explosive emotional environment are likely to produce unpredictable and undesirable emotional behavior. The cultivation of a calm frame of mind, the habit of retaining a long-range perspective in the face of immediately disturbing circumstances, an ability to analyze one's own moods and to trace them to the emotion or experience which set them off (Jourard, 1958), and good physical habits can all help an individual to understand, and hence to be less victimized by, his moods. Care in cultivating this frame of mind should be exercised, however, lest the child be subjected to the type of suppression of emotions that leads to explosion or to escape forms of behavior. An emotional environment that is too even or smooth can be dull and boresome or repressive and, therefore, dangerous to the development of initiative and to one's zest for living and hence to mental health.

DRIVES OR NEEDS

A lively controversy exists today about the theoretical bases underlying drives and motivation. One group of authors maintain that: "For full understanding of phenomena in the fields of learning and motivation . . . an instinct theory is indispensable. . . . Instinct stands for the part of behavior which would be learning if we were allowed to assume the presence of learning, but where we have good reasons for denying its presence" (Oppenhiemer, 1958).

Historically, in the field of child development, instincts were classified as self-preservation and self-realization, which can be summarized physiologically as needs to preserve life (food, rest, elimination and sexual activity), and psychologically as needs for feelings of personal worth and needs to contribute to the welfare of others (Lee and Lee, 1958). To this list Murphy (1960) would add curiosity and the need to maintain contact with the environment through the sense organs. Curiosity maximizes perceptual contact with new objects and provides perceptual fluidity which broadens perceptual contact (Smock

and Holt, 1962). Curiosity also assists the individual in the retention of things experienced (Maw and Maw, 1961). Curiosity about objects is negatively related to maladjustment and positively related to adequacy of adjustment in children (McReynolds et al., 1961).

Rogers (1963) points out the necessity to analyze not only the hows but also the whys of human behavior. "When we analyze the relationship between genes and behavior, and study the development of the various behavior patterns in the individual, and determine the number and kinds of factors that normally control the final form of the response, . . . the concept of instinct will disappear to be replaced by more scientifically valid and useful evaluations. The concept of 'need' appears to be more useful in present theorizing than is the concept of 'instinct.' "

McCall (1963) says that, generally, what we are motivated toward is an activity about a certain situation, thing or person, e.g., eating food, going for a walk, courting a girl, solving a problem. He points out that, contrary to the idea often advanced that satisfaction is an objective of most human motivation, it comes only *after* what is sought is achieved; it is not regularly the psychological *end* or *goal* of motive.

McCall presents two propositions relative to human motivation: (1) Behind and sustaining all, or virtually all, particular human behavior is an "élan to maximize"—not merely to maintain life but to live it as fully as possible, to develop one's capacities, to extend and deepen experience, to exercise one's powers to the highest.

(2) Instincts, or drives, or needs are sometimes classified into physiological and psychological categories. For example, physiological needs to preserve life are needs for food, rest, elimination and sexual activity; psychological needs include the needs to feel affectionally secure, to feel a sense of belonging, to feel a sense of status and of success. Here we see the word "need" used as an indication that motivation depends upon a shortage or deficit in the organism. In this instance, the word "impulse" indicates a tendency toward active correction of the deficit (English, 1962).

Motivation. As we have seen, motivation is associated with fulfillment of basic needs. It seems to explain the energizing of activity to fulfill the needs of the organism better than the instinct theory does. It offers help to child psychologists, parents and teachers in understanding the inner life of the child, in coming to grips with the ever-present question of why the child behaves as he does, and why those who live and work with children must "soon learn not to be surprised by anything, but to expect the unexpected," in which state of mind "they are usually not disappointed" (Martin, 1960, p. 69).

MOTIVATION AT DIFFERENT AGE LEVELS. *Infants* continually seek new modes of effective action in relation to their environment, and they abandon a mode once it has been explored to the point of full mastery. They appraise as favorable any change that demonstrates their (the infant's) effectiveness in relation to their environment (Stott, 1961).

Children in the *lower elementary grades* who place a premium on intellectual competence achieve more than do children who have no such motivation. Girls who were so motivated spent more free-play time in intellectual activities and achieved more intense striving in those activities than did girls who expressed less concern with intellectual competence. Boys in these grades stated their expectations of intellectual success, and these stated expectations were, in general, positively correlated

with their intellectual achievements; whereas girls' stated expectations were negatively correlated with their intellectual behaviors (Crandall et al., 1962; Kansler et al., 1963). Children of either sex in these grades are generally not distracted from their various tasks when they desire good results from the tasks in which they are engaged (Lilburn, 1962). One study found that, when asked to choose between a difficult goal or one easy to attain, the difficult goal was chosen increasingly more often from grades two through four, with no difference between boys and girls in this choice (Smith and Wing, 1961).

In a study of *adolescent boys* it was found that the goal setting process very quickly led to the establishment of stated goals that remained extremely stable when the conditions under which the subjects were operating did not change, but that proved very sensitive to changes in operating conditions (Kunapuli and Russell, 1960). The levels of aspiration decreased after the introduction of stress but appeared to decrease at a decelerating rate despite continued stress. Thus, it appeared that there may be a lower limit beyond which levels of aspiration will not go. A return to the prestress status was quickly followed by an immediate increase that soon arrived again at the prestress levels of aspiration.

The *effect of anxiety* upon performance may vary systematically, depending upon the intelligence level and the type of task and instructions given (Ruebush, 1960). Physical size and strength are associated positively with higher levels of motivation and aspiration (Clarke and Clarke, 1961).

Parents exert a considerable influence on the establishment of the child's characteristic style of need expression (Bell, 1958; Chorost, 1960). This seems to be based, in part, on the parents' primary position among all of the child's interpersonal relationships, and to the pervasiveness of their contacts with the child during the early formative years.

The Balancing of Needs. Progressive educators have long practiced the adaptation of teaching programs to fit at least the most outstanding of the "basic needs" of childhood. They have long taught that work with children proves wasteful unless programs are adjusted to the *individual* needs of *individual* children. Progressive educators have helped greatly to adapt schoolroom teaching and teaching by parents at home to the "basic needs" of children. They have not always remembered, however, the other aspect of genuinely successful education, namely, that the child must be trained to adapt his drives to the patterns of society. This requires a nice balance between understanding or moulding the environment to fit the child on the one hand, and discipline or training in self-control and consideration of others on the other hand.

It is comparatively easy to discipline a child into passive obedience to adult commands. It is more difficult by far to provide the kind of discipline that fosters self-directed conduct and that helps the child to mature into the kind of adult who can carry the responsibility of orderly socialized living. Totalitarian governments produce a passive-obedience kind of "disciplined" behavior through rigid control and coercive domination. Democratic governments need responsible adults who can act as independent beings in cooperation with other self-directed adults.

Old-fashioned parents and formal educators, motivated by the children-should-be-seen-and-not-heard philosophy, leaned much too far in the direction of forcing adult patterns upon children, ignoring many of their basic needs and building up antagonisms or neuroticism as a result.

Then the pendulum swung too far in the other direction in a few ultra-progressive schools or homes, with the result that children received no discipline, their whims were catered to and their "individualities" were permitted to flourish uncurbed. It soon became evident that uncurbed drives are no better than completely suppressed ones. No child who has failed to learn how to control his drives in order to live smoothly with other people can be called an educated child.

We now see the necessity for a smooth balance between the two extreme philosophies. We know that children cannot learn unless the lessons are tempered to their capacities; that they cannot develop initiative, a sense of responsibility, sound physical health, a proper sense of self-adequacy unless their daily experiences fit harmoniously into their need to grow and develop at their own rate, and unless these experiences produce satisfactions that fulfill their basic inner drives. We know also, however, that society will make certain clearly predictable demands upon children, some as primitive as the demand not to excrete urine or feces except under certain conditions, some as complex as the demand that normal adults earn a living and contribute constructively to the progress of society. Parents and teachers must learn how to educate children in full recognition of the value of both of these philosophies.

The *need to express and develop internal resources* is part of the need to balance adjustment to the outside world against the need to live happily with oneself. Therefore, the child needs to learn how to be extrovertive or outgoing in much of his behavior, but needs to learn how to be outgoing in a manner which adapts successfully to the world as it is; he needs also to develop the skills and interest which make a full inner life possible. For some years there was an unfortunate reaction to the psychologist's emphasis upon extroversion, with the result that children's schedules became crowded with group activities. Parents and teachers became anxious lest children fail to develop enough social skills, enough extrovertive interests. The result was that many modern children had little or no time to play freely, to develop initiative in planning of time or activities and, especially, just to read or dream. Granted that the child who only reads or dreams is failing to develop muscles or social skills, overcrowded activity schedules frequently permit modern children too little free initiative and too little time for quiet, restful, unplanned activities. The American Camping Association is appreciating this need and is definitely tending away from the highly scheduled, activity-type of camp to the freer, rest-and-play type of camp. Children need time alone, time to just sit under a tree—ripening, so to speak. They need to develop inner resources and a strong life philosophy so that, if and when their outer world goes to pieces around them, they will have sufficient inner strength to keep life meaningful.

The Concept of Developmental Tasks

The problem of how to adjust the child's inner physical and emotional drives and needs to the necessity of learning how to live successfully and happily in the society in which he finds himself has been clarified for parents and teachers by the idea of the developmental tasks which each child must accomplish as he grows. This idea is the outgrowth of coordinated work among a group of psychologists and educators, and has been summarized by Havighurst (1953). He defines a *developmental task* as *"a task which arises at or about a certain period in the life of an individual, successful*

achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by society, and difficulty with later tasks."

Some tasks, Havighurst says, arise mainly from physical maturation; others arise primarily from the cultural pressure of society upon the individual. An example of the former is learning to walk when maturation of bones, muscles and nerves has reached the point where the child, unless actively inhibited from it, learns to walk. Learning to behave acceptably with the opposite sex at adolescence is another example of learnings that occur primarily because of maturation, although, once the young person feels the interest drive toward the opposite sex, society steps in with a definition of what the word "acceptably" means. An example of a developmental task that arises primarily because of the cultural pressure of society is the task of learning to read.

Havighurst speaks of a third source of developmental tasks, namely, the personal values and aspirations of the individual which are part of his personality or self. He points out that even by age 3 or 4 the child's self is effective in defining and accomplishing his developmental tasks. Examples of tasks arising from this source are choosing and preparing for an occupation, or achieving a scale of values and a philosophy of life. Erikson (1950) has discussed certain emotional problems which must be solved if personality is to develop normally. These are analyzed in Chapter 15.

Examples of developmental tasks which should be accomplished at different age levels are as follows:

Infancy and early childhood: learning to walk; to take solid foods; to talk; to control elimination; to relate oneself to others.

Middle childhood: learning adjustment to school; to read, write, etc.; building wholesome attitudes toward oneself as a growing organism; learning to get along with age-mates; developing conscience; achieving personal independence; developing attitudes toward social groups and institutions.

Adolescence: achieving new and more mature relations with age-mates of both sexes; achieving a masculine or feminine social role; accepting one's physique and using the body effectively; achieving assurance of economic independence; preparing for marriage and family life; developing intellectual skills and concepts necessary for civic competence; desiring and achieving socially responsible behavior; acquiring a set of values and an ethical system as a guide to behavior.

RESPONSE TO EMOTION

When basic human drives or impulses are aroused the individual may: (1) behave in a direct or undisciplined manner, expressing the drive or urge without control or consideration of others; (2) repress the behavior entirely, for the moment at least; (3) express some sort of modified, socialized behavior which satisfies the need or expresses the emotion in some form acceptable to the culture in which the individual lives.

In our culture many drives are permitted little if any unrestrained expression. One does not wolf food when hungry, eliminate without inhibition, strike or scream when angry, run terror-stricken when afraid. Growing up, or becoming civilized, requires that one learn to eat "with manners," to eliminate only at a given place and under certain circumstances, to express anger in nondestructive ways, to develop courage in the face of fear. Such learning is one of the important parts of the educative process.

According to an old school of teaching, the task of parent or educator was to inhibit or repress impulsive behavior as the instrument of the devil; "discipline" of the regressive, brute-force type was considered necessary in order to curb the "original sin" in every child. This forceful suppression of original impulses and desires in children led to many cases of neuroticism and insanity and to the type of ineffectual, colorless personality which could express neither good nor bad impulses. Explosions of repressed emotional energy occurred; various forms of disguised expression (explained later in the chapter) resulted in confused and confusing behavior which neither the individual himself nor his companions could account for. From study of the behavior of individuals when emotions and drives are completely repressed, we now know that the type of discipline which blocks behavior without permitting it to be expressed in acceptable ways results in maladjustments of behavior. Only when the curbing or redirecting of strong drives is skillfully done, do we get happy, civilized behavior which is adapted or adjusted to the world about us.

Let us see in a little more detail how this comes about. Whenever a child or an adult finds one of the basic needs aroused within him two things may happen to it: (1) Circumstances may permit its fulfillment. If so, the need will be satisfied and the inner tension, roused if the need is not immediately fulfilled, is released. Inner peace and a sense of fulfillment result. (2) Circumstances may not permit the fulfillment, and a mounting tension or drive is felt by the individual. The individual seeks some means of releasing this tension and may make such an attack upon his environment that he eventually finds a means of fulfillment. Such expression of drives provides the motivation behind much of the constructive work and real accomplishment in life. Or, if he continues to be unsuccessful in finding release and fulfillment, explosion may result.

The basic resistance within the innate psychological constitution, the background of immediate mood, the long-term accumulation of controls, and of means of finding substitute expressions and satisfactions, will determine whether the individual will explode childishly or will eventually find satisfactory substitute expressions. If, however, the situation does not permit explosion or if the discipline of the child has made even substitute expressions impossible, the tension may continue to exist as an unreleased visceral tension, or it may tend to find disguised ways of expressing itself.

The Benefit of Conflicts

The child needs help in the direction and control of his drives. He looks to adults for this help as he finds that his own desires or drives come into conflict either with his physical surroundings or with his social surroundings. For example, the very young child may be impelled to handle a lovely, bright candle flame, only to find that it burns; or he may try to drive his tricycle through an opening in the hedge and then find it too narrow to permit him to go through. Thus he is checked by his physical environment.

He also soon discovers that many of his desires cannot be fulfilled without running counter to the desires of others. He cannot (or should not) be allowed to keep others waiting upon him when his attendants have other duties or obligations to fulfill. Some families "love" the child in a way that fails to submit his whims or impulses to any discipline so that he grows into a spoiled child who is unable to modify his impulses to fit the needs and desires of others. Children who have never come into con-

flict with the rights of others or with the need to obey certain routines in daily life, children who, for example, eat when and what they wish, who go to bed only when they like, who have learned nothing about concentration upon work are unprepared to enter school.

Conflicts, properly guided and expressed, are not only inevitable but are healthy as a preparation for life.

Children meet conflicts as they widen the range of activities from home to neighborhood, to school and, finally, away from home to college or job. They experience conflict as they encounter intolerance and prejudice, as they struggle for freedom and recognition, and always as they struggle with their own competing drives and desires. In addition to these conflicts, there are important conflicts between the child's natural drives and the demands of his culture (Bossard, 1960). For example, the culture demands of school-age children (1) attendance at school regardless of how well they fit the available types of school; (2) punctuality; (3) discipline which shows proper, quiet attention and respect for the authorities; (4) "passing" grades; (5) acceptance of the school program, passing hour by hour through the school schedule; (6) acceptance of the prescribed subjects and courses; (7) cooperation with extracurricular activities; (8) cooperation with community programs such as safety programs, thrift programs, and many other such requirements. This is a rather formidable list of demands, all of which must be adjusted to one another as Figure 21 shows. Many

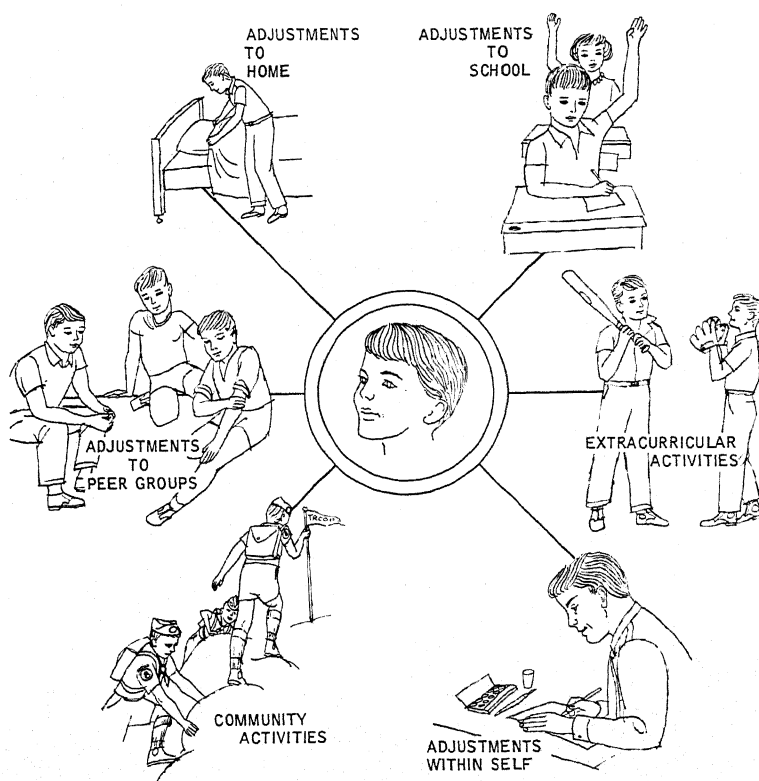



FIGURE 21. Demands made by our culture upon the school-age child.

children find themselves unable to live up to them. Conflict occurs which, when unsuccessfully resolved, often results in lethargy, "laziness," bad behavior, or a deep sense of failure.

Whatever children learn of standards of behavior at home, they inevitably encounter different standards as they are exposed to the outside world. Young children naturally regard their parents as all-wise and perfect. Parents are tempted to encourage this feeling. Unless prepared for the fact that other people may have other standards, the child entering school may find his security and his trust in fixed standards somewhat disturbed. Adolescents, particularly, as they are exposed to varying standards of behavior, or as their own methods of behaving come into conflict with those of their peer group, may find their goals, ambitions and values badly confused.

The wrong kind of conflict, as is so clearly and insistently pointed out by psychiatrists and child psychologists, not only is unhealthy, but dangerous (Harsh, 1959). Repression and wrong conflict lead to neuroses and delinquency. However, as we have said, the right kind of conflict can prove valuable, since it compels evaluation and judgment, provides training in decision-making, and gives the child experience in making adjustments.

Control and Redirection of Emotion

At birth and for a short time thereafter the child has little, if any, mental apparatus that is not identical with his bodily organization. He has certain basic needs, as we have seen, such as hunger, the need to eliminate bodily waste, the need for protection and care. When he is hungry, for example, the inner distress and tension accumulate to the point that it results in an automatic outburst of crying, which does not release the hunger tension but does summon help. It is because the human infant, in contrast to many animal young, is unable to obtain food and to care for his physical needs that he is absolutely dependent upon the nursing care of his mother or some other person.

As the nervous system matures, the child becomes capable of more differentiated reaction to his environment, of more physical coordination and, hence, of greater ability to meet his own basic physical needs. How adequately he learns these greater differentiations and how well he eventually comes to control his environment are dependent upon how well the adults about him, particularly his parents, help him to develop the necessary awareness, to acquire the necessary skills and to control as well as to express his inner impulses.

A study of the number and frequency of disturbances in children 22 to 121 months old (2 to 10 years) showed that the older the child the fewer things and situations tend to disturb him, but age was positively correlated with the duration of the disturbance once it has occurred (Fawl, 1962). Younger children were disturbed by interference with ongoing activity, imposition of an external driving force, psychological loss, and consequence of own acts. In older children, disturbances were usually unrelated to the child's ongoing activity and arose from an "offending imposition." The results, according to the author, may be interpreted as reflecting the greater degree of socialization of the older children, or their greater capacity to tolerate frustration.

Indirect Expression. There are many indirect outlets which help the child to express feeling or to release emotion (Figs. 22, 23). Sometimes the individual hits upon a form of indirect

FIGURE 22. This child is waiting her turn for tryouts for a school play. (Courtesy Georgia Latwick.)

expression. For example, the child whose urge to physical activity is blocked because of illness or a crippled body may find outlet for his energy as well as status both in his family and among his peers by learning to draw, or to detect an unusual number of bird species, or to play a musical instrument. On the other hand, he may hit upon a poor substitute for finding the satisfaction he seeks. He may, for example, play up his weakness, trying to find in sympathy from adults and peers the security he had not found in approval of accomplishment. Or he may *escape into unproductive daydreaming* and tend to live more and more in the world of unreality and, therefore, less and less in the world of productive action. This is a favorite way of running away from disagreeable situations. Some forms of daydreaming lead to action, serve as sources of inspiration, or suggest the solution of practical problems; these are productive daydreams. Harsh treatment of children who daydream will only force them to retreat still further and, hence, to daydream still more. Most children can be coaxed back into the world of reality by gradually increasing interest in things in which they can find success. The object with such children is to find something in which they can succeed and with which they can win love and attention, then gradually to widen the areas in which they can find constructive satisfactions.

Dreams that occur when the child is asleep offer another means of indirect

FIGURE 23. Finger painting—a means of expression. (Courtesy Los Angeles Public Schools.)

expression of aggressive feelings and other emotional "accumulations" not allowed direct expression. One study of dream content showed that the greatest amount of aggression occurs in the dreams of children from ages 10 to 12 and diminishes thereafter to a fairly low level after the age of 30 (Hall and Domkoff, 1963). No sex differences were found in aggression for the youngest group, but a sex difference appeared after 12 and became more pronounced with age.

Other forms of escape are: (1) "sour grapes," by means of which the individual unconsciously mobilizes his wishes to be a reasonable person (Hilgard, 1962); (2) "projection," by which repressed motives or other unacceptable and unrecognized aspects of one's own personality may be attributed to others (Berelson and Steiner, 1964); and (3) "reaction-formation," by which repression of strong unacceptable motives is sometimes accompanied by overt behavior and conscious feelings that are *opposite* to the repressed tendencies (Masserman, 1961).

A serious form of escape from reality is *autism,* in which the individual becomes absorbed in fantasy as an escape from a reality he seems unable to accept and adjust to. This type of escape may even occur in young children, the child simply withdrawing, standing around or sitting quietly for long periods of time. Such children almost always have an inadequate speech repertory; they lack sensitive interchange between speaker and listener; they are impoverished in behavior and in perceptual repertory (Fester, 1961).

Another form of disguised emotional behavior may be the *development*

of physical complaints (Hall and Domkoff, 1963). When an individual cannot find satisfaction in successful action he sometimes tries to solve the problem by developing bodily inadequacies which offer a reason for the failure or which can be used as an excuse for not meeting a situation. One child, for example, develops a sick stomach every morning about half an hour before school time. In most cases a quiet insistence that the child face the situation will provide the help necessary to him and he will eventually overcome his need to escape. This is possible, of course, only when the school situation can be made to provide him with genuine satisfaction. To the degree that the school situation continues to be painful and frustrating to him, he may return physically, but he will be sure to find other means of escape, as, perhaps, by daydreaming in school.

One should, however, be careful about forcing children to face situations from which they need to seek escape. Sometimes children, especially in the first years of school, have been so poorly prepared for school entrance that they are emotionally unable to take the impact. Forcing such a child to face the situation may develop in him so deep an emotional association with fear and uneasiness that he may never learn to enjoy school and, therefore, to utilize his full intellectual potentialities in the situation. Such a child should be accompanied to school by a parent or older child and should receive some special attention from the teacher until such time as his home, in cooperation with the school, can help him to grow up enough so that he can take school on his own. There is a difference between coddling a weak child into further weakness and giving him a helping hand over a truly difficult situation. Parent and teacher should both learn the latter art and should also develop the ability to detect a situation which requires a gentle but firm insistence upon facing a difficulty. Use of force, such as in throwing a frightened child into the water to teach him to swim, will only result in a deeply associated fear of water for years to come, perhaps for life.

Another form of escape from frustration or failure is to *make excuses which are not the real reasons* for one's behavior. For example, the child who fails a fair examination because of lack of adequate study may claim that the examination was unfair, or that he could not study because he had lost his glasses. If he finds it difficult to recite in class he may convince himself that people who recite are "show-offs," or that silence displays more sense than to risk possible wrong answers. He may blame the broken desk or the torn book on someone else, or insist that the desk was broken before he occupied it. One should not jump to the conclusion that any child who appears to be offering excuses or "alibis" is lying or rationalizing. Sometimes the desk *was* broken when he occupied it, or someone else *did* tear the book. Few things upset a child or lose the parent or teacher real influence with a child or with the rest of the children in the room more than a false accusation of lying when the child is really telling the truth. On the other hand, children who habitually escape into rationalization should be given the help of a gentle but firm facing of facts. Some children can be helped by an appeal to the prestige and "grownupness" of telling the truth and making adequate restitution for mistakes.

Some children follow the false pattern, which is frequently set for them by adults, of *attempting to build up their own prestige by attacking the prestige of others.* Tattling, petty gossip, constant unfavorable criticism of others are almost a sure sign that

the individual who does these things is insecure within himself and has resorted to a false means of building his own sense of superiority. The idea seems to be that if other people can be made to appear stupid or vicious, then I am automatically better than they are. This is an unprofitable way of building prestige and usually results in the loss of friends, either actual or possible, which, if won, would give the sense of belongingness and prestige or status which the individual feels he lacks. Children who use such false means of finding inner comfort should be helped to develop constructive means of winning and holding friends, and to learn constructive accomplishments which will give the status they crave.

Discipline. We have seen what happens when emotion is suppressed rather than redirected. It is important that discipline should not be of the unduly severe type which sets off the autonomic nervous system or which forces the child to suppress or to cover up his emotion or to explode. It should, rather, be of the type which helps the child to understand himself as well as the world about him, which teaches him gradually increasing control and socialized expression. Discipline is most effective when it permits the child to feel freely his emotional reactions, but at the same time helps him to express his feelings in constructive rather than in destructive ways. The object is not to avoid emotion but, rather, to utilize and guide it. If a child were cared for but never disciplined he would presumably develop skills, but no character (Mowrer, 1953). Some vigorous emotion is desirable, as we have seen, since emotion is at the root of all purposeful motivation and provides the drive, not only for inner personality development, but also for all really uphill work. Constructive emotions need to be preserved. It is the destructive emotions which most need redirection and control. Parents and teachers alike have great influence upon the pattern and speed of the child's emotional development. Methods which stimulate rivalry, jealousy, material greed, fear or revenge should be avoided. Courage, desire for approval (if not overdone), sympathy (if not maudlin), love of fellows, joy in a hard job well done, and other such constructive emotions should be cultivated. We shall discuss parental discipline further in Chapter 5.

Abused Children. It seems hard to believe that any adult would so severely abuse a child that the child would require hospitalization. Some parents, however, are so immature in self-control and so impulsive in action that they do so abuse their children. Fortunately for such children some states have laws designed to protect them, but few objective guidelines for child protection have been firmly established (Elmer, 1963). Little is known, for example, about the long-term effects of abuse on the child or about the nature of factors which determine the outcome of rehabilitative effects with the families of such children. Perhaps the chief reason for this state of affairs is the failure of contemporary society to admit the existence of abuse and gross neglect of children (Elmer, 1960). Many reports published during the past five years have added to the weight of evidence that infants and young children may be brutalized or killed through the negligence or assault of their caretakers (Gwinn et al., 1961; Kempe, 1962).

The Children's Bureau has drafted and distributed suggested language for a state law to protect the physically abused child. This law, it is hoped, will call for mandatory reporting by physicians and institutions to police authorities of physical abuse of chil-

dren based on medical findings. This proposed law appears as the fourth of a series of legislative guides prepared by the Children's Bureau to help the states develop sound legislation for the welfare of children.

Delsboro (1963) defines an abused child as "any child against whom bodily harm was done to such a degree that it came to the attention of the agency and resulted in the rendering of service to protect the child." Malnutrition, starvation, or sexual misuse of children were not included unless bodily damage was also done.

Of 80 cases studied, 4 fell into the category of abuse by mentally ill parents.

In cases in which the abuse of the child was an "overflow from the parents' aimless way of life," the parenthood seemed to be little more than biological. Lives of the parents were marked by illegitimacy, paramour relationships, misuse of income, repeated evictions, excessive use of alcohol, and deplorable housing and housekeeping. Such parents appeared unable to help themselves. The abuse of their children seemed to be an overflow of their own frustrations, irresponsibility, and lack of belief in themselves or anything else. Parental abuse in such cases leaves little children with no defense; if there are older children in such a family, the abuse is most commonly directed at them, perhaps because older children are more likely to be aware of values different from their parents'. All such parents who received a psychiatric examination were diagnosed as having "inadequate personality."

Diagnoses of abuse are sometimes hard to make because, if the child is injured seriously enough to be brought into a hospital, the parent usually attributes the injury to other causes. Police have recently alerted hospitals to scan the whole skeletal system by x-ray if there is any suspicion that the child has been beaten. If evidence of repeated beatings is apparent, the doctors are required to turn such cases over to the hospital's social service department, which follows through on investigation and disposition of the case. Separation of the child from the family is effected when it becomes apparent that the abusing parent cannot be helped (usually through psychiatric care) to a personality adjustment which will preclude abuse.

In the 80 cases studied by Delsboro, all revealed a long-standing, severe interpersonal conflict, either between parents or between the abusive parent and a significant relative. Psychiatric evaluation failed to reveal discernible psychosis in any of the parents. The most salient personality trait of the abusive parent in adult relationships was dependency. The injured child was invariably seen by the abuser to be either a competitor or a burden which had to be destroyed or at least made to suffer. There were many other inner-conflict reasons for the abuse of children. Most of the abused children were manifesting internal turmoil by bed wetting, truancy, fire setting, or withdrawal.

Delsboro also found a category of disciplinary abuse in which the child was severely disciplined because he failed to comply with a parental expectation or had committed some forbidden act. All but one of these children was 7 years of age or older, the majority being adolescents.

The Contagion of Emotion

Emotion is contagious in the sense that it spreads from person to person. A cross teacher soon has a room full of cross children; a fearful child may learn calmness from being near a calm child. Conversely, of course, a cross

teacher may feel herself "healed" and quieted by the joy of being with her children so that she ceases to be cross before she has set them off; and a calm child may learn fear from a fearful child. The strength or valence of the emotion determines whether it will dominate another emotion or be dominated by it. Adults of normal emotional strength in dealings with children are, on the whole, stronger in emotional valence than are children and can, therefore, set the tone of a group. Adults with weak character, of course, lose the control of even young children.

This should not be confused with the fact stated in Chapter 10 that children imitate or are influenced by the opinions of other children so that they "stray" from the ideas set by parents. In the long run, the parental pattern dominates the totality of the child's behavior unless the parent is weak or loses the child by trying to use force on an arbitrary basis. In any given situation, the adult can more easily set the tone of gaiety or severity, of nervous tenseness or of calm than can a child. Teachers can develop an "atmosphere" in a schoolroom, even when the major trend of the atmosphere is contrary to the previous experience of the children. For example, a group of good workers can be made lazy by a slovenly teacher, or a disorderly group can become reasonably orderly, calm and busy; a fearful, evasive teacher will set an atmosphere quite different from that established by a courageous, direct personality.

Further aspects of the influence upon the child of his family, which is his most insistent immediate environment, will be discussed later.

DEVELOPMENT OF EMOTIONS

It was implied earlier that emotions change as the child grows into maturity. In a study of preschool aged children it was found that the number of emotional reactions (positive and negative) is dependent upon age. Negative reactions predominate in the second half of the first year of life. The number of negative reactions is least between 24 and 30 months of age. A peak of positive reactions occurs just before age 3; the fewest occur below 6 months. Social environment is decisive in the general emotive modulation of young children in such collective arrangements as nurseries and prekindergarten schools (Harinekova, 1960).

Expression of emotions in young children is likely to be direct and physical—pushing or hitting, hugging or kissing. Transition from this type of expression to less direct methods occurs with increasing age.

What constitutes emotional maturity is important for the understanding of emotional stability. Many forms of emotional behavior now called unstable by teachers and parents might better be described as immature forms of reaction. The pattern of normal development of emotional behavior is now fairly well known as a result of research studies. Some of the findings of these studies follow.

As emotions develop there are changes both in the nature of the stimulus that proves effective in rousing emotion, and in the manner of the expression. Young children (Breckenridge and Murphy, 1963) are roused to emotion by tangible events which impinge directly upon their senses. As the child grows older and as his capacity to perceive, to remember and to anticipate events develops, we have seen above that he becomes emotionally responsive to signs and symbols which promise furtherance and guidance of his welfare and his wishes. He thus becomes increasingly able to control his impulses. As children grow older they will, if given adequate help by adults and if their lives are satisfying emo-

tionally at each level of development, tend to outgrow certain infantile fears, angers, jealousies, joys and pleasures. They will not cease to be afraid or angry or glad; but they will learn to be stimulated to fear by different or more "grown-up" situations. Their joy will be aroused by less childish things and will be expressed in less childish ways. Expression will be less gross and explosive and will become more subtle and indirect; emotional states will be less transitory and more prolonged and even.

The reduction of number and kind of emotional outbursts does not depend solely upon change of form of the expression of the emotion. Another aspect of the development of emotion lies in the nature of the emotion itself, as well as in the type of the stimulus which sets off the emotion. Fear, for example, may change to apprehension or uneasiness; anger may change to resentment; the "jump-up-and-down" kind of joy may change to pleasant anticipation.

Crying. A number of studies of crying reveal a pattern of growth that one may readily observe in normally growing children. In infancy the child cries with vigorous, total bodily expression and largely for causes such as hunger and other internal discomforts. Even by 6 months of age the vigor and the total amount of crying are greatly reduced, being replaced by the milder expressions of fussing or vocalization. As the child grows through the preschool years he cries less and less; when he does cry it is usually for reasons of physical pain or because he is thwarted by the environment or by playmates or family. In the school years the pressure of the peer group helps him to outgrow the "baby" habit of crying. Only about one-half of 10 year olds cry more than rarely, the main cause being anger, with physical hurt next. Crying decreases rapidly after this until by 15 crying occurs very seldom. By 16 no boy admits to crying; some girls still cry in anger or over real disappointment. Ultimately, crying in mature adolescents and adults becomes limited in our culture to quiet crying in private only and for reasons of grief or other intense emotion. In some cultures loud wailing in public to express grief is expected. However, loud crying because of pain or annoyance is socially unacceptable in most cultures as are outbursts of rage or overt expressions of fear.

Anger. Goodenough (1959) found infants responding with anger to minor physical discomforts, interference with physical activity and removal of attention, or in situations which arose in connection with routine care such as dressing, bathing and the like. At 18 months, resistant objects and transitions from one activity to another, such as changes in the necessary routines, generally arouse anger. Around 20 to 22 months of age anger often results from the child's failure to make the rudimentary language at his command understood by others. At 2 years, when physical habits are being established, interruptions of play precipitate angry resistance. At this age, problems of play with other children create conflicts over authority and over social relationships, especially with other children.

At these early ages anger responses are direct and primitive. As children grow older, the responses become less violent and more symbolic. For example, children of 15 or 16 months may express anger by throwing objects. At 18 months, when command of balance permits it, they may kick the offending person, or throw themselves down on the floor in a kicking, screaming tantrum. This is an age when the child is often rough, not only with his toys, but with other children, or with animals. At 2 years

he may hit, poke or bite other children, and at 2½ years he may attack other children with conscious intent to hurt them. At 3 or 4 years, and for several years thereafter, language begins to take the place of physical aggressiveness as an anger response, the child often calling names, bragging or boasting, making angry, sarcastic or cutting remarks, swearing, tattling or using irony or insinuations.

In groups of preschool children who have been together long enough to form a social group, one popular form of showing resentment against another child is to exclude him from the group. Among children who have not been together as a group in the preschool years, this type of anger outlet may take place for the first time during the early elementary years. In any case, it remains a frequent means of discipline of one child by another even into adolescent years.

There is a period of less aggressive expression of anger around age 5, but sometimes a renewal of violent methods of expression at 6, when hitting and kicking are typical. By 7 years there appears to be less anger aggressiveness. The child may now remove himself from groups rather than force the withdrawal of others. By 8 and 9 years the "hurt feelings" expression of anger appears. In the normally developing child of this age physical aggressiveness is generally almost at an end, being replaced increasingly from 5 years on by arguing, alibis, calling names, or making disagreeable remarks.

We see, then, that as children grow older in the early school years, anger reactions become more directed toward a single person and take the form of attempts to hurt the feelings rather than to injure the body of the offender. After-reactions, such as sulking and resentment, increase into the school years. Even at 10 years, however, anger is likely to be violent, immediate and expressed physically. The 10 year old may go off by himself, but usually after some violent physical or verbal explosion. The 12 year old's violence is more likely to be verbal; he goes off to his room without slamming the door. By 14 the child may take his anger out on someone else. By 16 tempers are under fairly good control; very few "blow up" although some sulk or brood. By 18 the young person is usually in college or on a job; now, if ever, real control will be achieved.

Socialization, or group play, increases steadily in the preschool years, reaching a peak of development in the early elementary school years, as we shall see later. *Quarrels increase as group play increases,* since children, playing by themselves, are crossed in the fulfillment of their ideas or are interfered with less than when other children are present, especially when the other children are sharing an idea or equipment in well-organized group play. An important part of the gang-age education lies in learning to maintain such close personal contacts without quarreling. With group contacts at a height, but with skill in social contacts only in the making, it seems evident that quarreling will be frequent and not too skillfully conducted in the late preschool and early elementary school years.

There are some studies and many clinical analyses which help us to build a fair picture of what the successive sequences of development toward "maturity" in anger are. In general, we know that children pass through an early elementary school period of loudness and boasting, of gruffness and sauciness toward adults and toward each other. To a close observer this often appears to be whistling to keep up one's courage. Faced with adjustments to school, competi-

tion on school playgrounds (much larger and much more crowded than neighborhood lots or home yards), beyond reach of a quick run to mother—all this puts a good deal of strain on most children. They "woof," "boast," and bluster at each other, often finding that the louder the bluster the greater the success among their peers. They sound tough, trying to convince themselves as well as others that they *are* tough. The habit easily fixes itself, and comes stalking into home or schoolroom. More than that, the child seems to feel that what intimidates peers might possibly have the same effect on adults—one can only try it and find out. This disturbs adults and gets children into trouble.

THE DISCIPLINE OF ANGER. In dealing with anger in children it should be remembered that many outbursts of anger, especially in young children, are caused largely by the child's lack of skill in handling situations. As we have seen, explosions of anger diminish in frequency and intensity as children gain skills in the performance of difficult tasks. As we shall see later, many behavior problems occur at given stages of growth, being simply by-products of the lack of skill. Such behavior problems are best handled by quietly waiting for growth, with its increase in skills and understanding. During the preschool and early school years when much of the anger displayed by normal children is due to the child's inability to handle a given situation, or to the pressure which adults put upon children for learning, adults should be as serene and tolerant as possible in dealing with children. If discipline for anger behavior is too severe, children may too soon repress these forms of behavior, with resulting accumulations of emotional tension and conflict. Control must, however, be developed by gradual, steady stages if the child is to outgrow childish behavior (Sigel and Kohn, 1959). It is interesting to note that children may submerge overt responses while they are still childish enough emotionally to feel angry over situations to which they have learned not to express anger in open behavior. Studies of children's play show that even young children release certain aggressions or hostilities in play which they cannot release in the direct situation which roused the feelings (Bartlett and Horrocks, 1958). Many situations rouse anger or aggression in children, but fortunately any healthy person, whether child or adult, can withstand a considerable amount of frustration without becoming chronically hostile. Little is known about the accumulative effect of one frustration experience upon reactions in a subsequent one, or upon other nonfrustrated behaviors (Lawson and Mark, 1958). Common observation reveals, however, that accumulative effects do influence subsequent moods and behavior.

A great deal of understanding is necessary if one is to discipline children wisely. For example, children may appear to be very immature in anger reaction when, in reality, they are being pushed beyond reason. A task which is easy for one child may prove an intolerable burden to another less able child or to a child who has not had a background of learning in emotional control. Again, it is easier to achieve control when circumstances are favorable, as in the case of a child living in a small, well-regulated, peaceful and well-balanced family. The child who lives with a large family, all of whom feel free to boss him, or several of whom are immature and overdemanding or otherwise emotionally unstable, will find himself constantly interfered with and frustrated. Control of anger for the latter child is a far more difficult

problem than it is for the former child. Children who are physically not up to par also have a more difficult problem of emotional control. Discipline should be adjusted to meet such situations. Parents should evaluate the home situation and the personal background of each child. Teachers should understand the home background and the individual situation of each child if they are to be of the greatest possible help in emotional development.

Fear. As in anger, both the stimulus to fear and the response develop. In infancy physical and immediate stimuli are the typical sources of fear. Such stimuli are sudden noise; strange objects, situations or persons; situations, persons or objects associated with pain; sudden removal of support. In general, anything unexpected seems to arouse the startle reaction in infants (Illingworth, 1962). Such stimuli rouse not only the startle reaction but also fear reactions in most children up to 2 years of age. From 2 to 5 years, children are increasingly roused to fear by animals, the prospect of being left alone or abandoned by loved persons, dangers associated with the dark or imaginary situations, and possible injury through fire, automobiles, etc. The increase in such fears indicates the impact of our culture as a factor in determining emotional responses, since these are the wrong forms of discipline, threatened with as penalties for undesirable behavior.

As the child passes from the preschool to the elementary school age he becomes more apprehensive about failure and humiliation. In other words, as he develops courage and skill, he learns to fear less the threats to his physical body; but as his awareness of and reaction to social situations develops, he learns to fear threats to his prestige and to his ego.

Gesell's classical studies of fear in children (1946, 1956) found that children of 6 years show fear of the supernatural such as ghosts and witches and of the elements such as thunder, rain, wind and fire. Some children also showed fear that the mother would die or that something would happen to her. There was also fear of being late to school which, in the experience of the authors, is proportionate to the pressure exerted by the school for promptness and the penalties exacted for tardiness. By 7 years Gesell's children were showing deeper, more worrisome fears such as fear of war, spies, burglars, people hiding under the bed. However, they were beginning to resolve the fears by such methods as using a flashlight or getting someone to precede them into feared places. Such social worries as not being liked by parents, teachers or playmates appeared, the fear of being late to school persisted and fear of not finishing schoolwork was added. Fears stimulated by reading, radio and movies also appeared. By 8 years Gesell found less fear of the elements, though fear of fighting, of failure and of not being liked may still persist. He found his children of 9 years worrying mostly about school failure, though some were worried about other competitive situations, as well as about trouble at home. Self-judgment at this age is so well developed that some children also worried about their own mistakes.

Gesell's 10 year olds were less anxious than when younger. His 12 year olds were again relatively fearful of such things as being alone in the dark, animals, crowds and high places. By 14 worries exceeded fears, such things as grades at school, world conditions, and not being liked by others being frequent sources of worry. In a carefully selected nationwide sample of 1045 boys ages 14 through 16, the University of Michigan Survey Research Center (1955) found

that only 4 per cent of the boys reported that they had no worries.

In adolescence the chief source of fears and anxieties shifts to sexual inadequacies such as physical inadequacies or other reasons to fear that one may fail in boy-girl relations.

In both the elementary and the high school ages, the child's worry may be, and often is, quite disproportionate to the likelihood of the actual happening. On the other hand, when actual disaster strikes, as in the severe bombings of World War II, children show an amazing capacity to "take it" (Gillespie, 1942). How children "took it" depended far more upon the courage and morale of the adults near them than it did upon the actual physical experiences to which the children were subjected (Alcock, 1941).

ASSOCIATED OR CONDITIONED FEARS. Many fears of persons at all ages are not actual fear of the many situations that seem to arouse the feeling of fear but are, rather, associated fears. Once frightened by an object or situation, the individual tends to feel fear of people, objects or situations associated with the original fear situation. For example, children who have been badly handled or who have suffered extremely severe pain in a doctor's office may thereafter display panic at the sight of any persons in white coats. Having been frightened by a dog at a given corner of the street, the child may become uneasy whenever near that particular corner. Having been embarrassed by a real or fancied awkward situation on one of his first dates, an adolescent may thereafter avoid dating because of the uneasy feeling he gets whenever he contemplates a date.

Individuals differ markedly in their susceptibility to such nebulous or generalized fears. It has been observed that people who have a past history of many fears and of general emotional instability tend to react with more severe fright to a given situation and to generalize the reaction to more associated fears. Also, there seems to be a "halo" effect following any severe fright; an individual who has, for example, recently been through a severe automobile accident is almost inevitably "jumpy" about situations which would normally leave him quite undisturbed. A child who has recently seen his drunken father beat his mother or threaten the children in the family will probably be distractable and nervous for a time.

REASONS FOR FEARS. Children are responsive to the fears of their parents, either the fears parents have for themselves, or the fears the parents have for their children. These parental fears not only suggest danger to the child but, because the parent is fearful himself, parental fears undermine the child's confidence in the protection that his parent affords him.

Behind the fears of many children as well as grownups are feelings of guilt about some real or fancied offense against the authority of the parents or, as the conscience develops, against the authority of their own consciences. As we have seen, children as early as 8 years of age can worry about their own mistakes. In the fifth and sixth grades children report worrying about such items as "making your parents sad," being scolded, telling lies, doing wrong, etc. Psychoanalysts call attention to fears which are rooted in a sense of guilt, especially those associated with impulses and conflicts related to sex (Deutch, 1950; Slavason, 1952).

People who have been ill frequently seem to exhibit more fears than other people who have been free from serious illnesses. This may be because children who are often ill lack physical strength, with the result that they feel less equal to emergencies. It may also be that children who are often

ill sometimes feel the anxiety of their parents that they may die and hence tend to carry a vague uneasiness that healthy children do not experience. Such submerged fear of death is frequent in children suffering from severe diabetes since they actually live in danger of death. It is also true of children who suffer heart ailments, although many of the cases of anxiety among rheumatic fever cases are due to misunderstanding and overanxiety of parents whose children are not actually in immediate danger of death. Deaf and blind children, being less able to hear or to see and hence to react to danger, typically suffer more fears than do normal children. Parents often find it difficult to answer questions about death. Wahl (1958) suggests that their hesitancy sometimes implies to the child that there is something to fear about death.

Occasionally, anxiety in a child is rooted in an overprotective attitude on the part of the mother. When the child is surrounded with protection from possible danger, both physical and psychological, he comes to feel that life is somehow a dangerous business. The result is likely to be vague uneasiness, timidity about many real and fancied situations, or outright fears. The solution to such fears is, of course, in part a change in the feelings and attitudes of the mother and in part an education of the child. Fundamental treatment of such a mother should probably not be undertaken by anyone less well trained in understanding of the basic personality drives than a psychiatrist. Environmental treatment of the child, consisting of visits away from the mother, such as trips to summer camps or to relatives, and a development of the relationships with other children, usually produces good results. Some demonstration to the mother of how to handle temper tantrums and disobedience, some broadening of her interests and increase of her social contacts may help.

OVERCOMING FEARS. Many fears appear and disappear in the course of normal growth. As the child develops fears about the dark, about traffic dangers, about being abandoned or left alone in the preschool period, the normal course of growth which gives him greater understanding and greater competence tends to dissipate the fears. If he develops apprehension about failure in school he may find that success is reasonably certain with good effort; or he may develop compensations for continued failure if his experience requires this. Much of what happens to him depends upon the attitude of his family. If he fears social humiliation or sexual inadequacy in adolescence, the achievement of social skills and success will remove the reason for his fear; or if failure overweighs success, he may develop compensatory interests and activities. Difficulty arises when failure to achieve success, coupled with continued adult pressure, prevents the development of adequate compensations. The result in such cases is continued apprehension and emotional conflict.

Fears of unfamiliar things tend to yield to wider acquaintance with the environment and the growing awareness that new things may more often prove to be fun than dangerous. The experience of familiarity with new places and new situations which prove not to be dangerous removes the initial sense of apprehension with which many children react to the new and unfamiliar.

Many fears that arise in connection with some frightening event will normally fade through forgetting if there is no renewal of associations either by a repeated event or by continued reminders of the event by adults or by other children. Fre-

quently, fear due to an unfortunate contact, such as with an injudicious stranger, will fade if not repeated or will give way to happier experiences with strangers if such experiences are provided. Fear of dogs may, for example, yield to the love of one's own puppy if a puppy is given the child to care for.

There is much that an understanding adult can do to help children to overcome fears. A thorough check of physical difficulties and a reasonable program of physical hygiene may restore a child to the level of physical vigor at which he can feel equal to the demands of life. The acquisition of physical and mental skills increases the child's equipment for meeting life and tends to increase self-assurance. A check on the demands being made upon the child by adults or peers may reveal a source of anxiety lest the child fail in meeting his own or someone else's idea of success. An atmosphere of understanding and sympathetic appreciation, along with the security of a fairly regular regimen, does much to reassure timid children. Children who fear the unfamiliar may be made more courageous by a program of meeting new things and situations under the auspices of a friendly adult or older child. Explanation and preparation help a little, especially if not overdone to the point where the child becomes suspicious that overpreparation for a situation implies danger. Explanation, however, is not so effective as exposure to the situation under conditions in which the child feels secure and can develop familiarity plus a feeling of protection or security, or in which the situation proves so pleasant that a positive emotion replaces the negative. This process of "reconditioning" the child to a given situation may or may not be successful since, unless skillfully used, there is a chance that the child may react to the situation so negatively that the actual negative emotion outweighs the planned positive emotion.

Dramatization of the feared situation often helps. (See Fig. 24.)

Poor methods of trying to overcome fear are ignoring it (although this is better than making too much of it); temporarily removing the cause; forcing the child to face the situation without providing him the security of a trusted adult or other child (such as thrusting him into a dark room "to show him there is nothing to be afraid of"); using the verbal pressure of ridicule. Any of these methods may intensify the fear.

The play interview technique in which a friendly adult helps the child to express hidden fears and to reorient his feelings toward feared situations is helpful. Play techniques will be discussed later in this chapter. Learning to live with fear is important to ultimate mental health because the inroads of fear upon peace of mind and efficiency of living are great. Longtime or acute anxieties force one into a psychological position in which excessive amounts of psychic energy are absorbed or in which destructive defenses and compensations are built up.

Other Emotions. The development of emotions of *love and sympathy* will be traced in some detail in Chapter 14. It is more difficult to trace the development of emotions other than fear, love, and anger since much less work has been done on them. Several studies of *jealousy* detail some of the causes of jealousy and what happens in behavior when the child is jealous, rather than how the emotion of jealousy develops. These studies show that when children are jealous of a younger sibling they may revert to infantile habits, such as wetting or demands to be fed or dressed, even when they can care for themselves. Or they may take out the suppressed

FIGURE 24. Playing doctor adds to the reassurance of the printed lesson that doctors, dentists and nurses are our friends. (Courtesy Georgia Latwick.)

hostility felt toward the baby by scolding or punishing a doll or in other ways give vent to feelings that they may not express openly. Occasionally, the behavior takes the form of unwonted displays of affection toward the baby as a cover-up; or the child may bid excessively for adult attention by excessive affection or helpfulness, or by tattling or lying. Sometimes the behavior is varied and unpredictable, the child, being troubled, trying any and every means of meeting his problem. In fact, none of the studies reveal any behavior which is typical of jealousy alone; all show behavior that could exist in a child troubled by any type of disturbing situation.

Studies of laughter and *humor* show evidence of laughter in the early months of life which results, as a rule, from a gay approach or from nursery tricks on the part of an adult (Gesell, 1956). Gesell notes that at 2 years the child may himself initiate humor and may carry on such a game as peek-a-boo even without adult support. At 2½, the child may be handled by humor, such as an answer of "yes, yes" to his "no, no"; by 7 years this ability to be handled by humor has disappeared. In the preschool years laughter is associated largely with bodily activity and social play, and with feelings of well-being (running, romping, chasing), exciting physical contacts such as tossing and tickling, opportunities to be self-assertive, and other such physical or ego-satisfying occasions. Humor at 3½ years is sometimes involved in imaginary play;

at 4 years humor is likely to be silly and boisterous, wild laughter sometimes accompanying play; at 5 the child enjoys slapstick humor, which he initiates.

One study (Laing, 1939) of children from 7 to 18 years of age concluded that the development of the sense of humor parallels the development of both intellect and other emotions than humor. This study, which was done on English children, showed that the most frequent source of humor in children of 7 to 10 years of age was deviation from the normal; at 11 to 13 years, discomfiture of other people and deviations from the normal. From 14 to 18 years there was increased appreciation of verbal humor.

One's own observations of children of elementary school age reveals that they are not only reactive to the type of incongruity, frailties, inferiorities and failures of others as shown by the above studies, but that they are also reactive to less negative aspects of life. Although children of 8 years enjoy the type of humor in stories in which one person is fooled by another, thus making someone uncomfortable, by 9 years they enjoy the element of surprise in stories and even begin to enjoy jokes on themselves.

Gesell (1956) found that humor at 10 years is broad, labored and generally not funny to adults; practical jokes, punning and riddles abound (Fig. 25). Adults usually understand 12-year humor; a few 12's are outgrowing practical jokes; clowning around and insulting friends runs high. At 12 there is much sex humor which tends to replace the jokes about elimination which were popular at 11 years. By 14 practical jokes are on the wane, but insult and ridicule are favored among friends. Off-color jokes are on the decline, especially in mixed groups. By 16 most young people understand the subtle implications of cartoons; they may use humor positively, as to kid a friend out of a bad humor.

If the child's sense of humor is grow-

FIGURE 25. At 10 puns and riddles abound. (Courtesy H. Armstrong Roberts.)

ing as it should, it gives way to the development of the sense of sympathy for others, and the inclination to laugh at the discomfort or inferiority of others wanes. Most emotionally "mature" adolescents have learned not to laugh at such situations, and even to feel discomfited themselves when others do so. The possibility of being amused at jokes which concern bodily elimination and sex develops as the child develops repressions about either one, or as he is led to think that such jokes show grown-up humor. As we see above, such jokes are particularly likely to be exchanged among boys in the later gang age and adolescence. Young people whose sex education is sound, and whose appreciations and interests are widened into varied and wholesome channels, soon grow beyond the desire to spend time on such types of humor.

BEHAVIOR PROBLEMS

Space will not permit a long discussion of behavior problems. It is important, however, to point out that many so-called behavior problems are merely aspects of normal emotional growth. As we have seen above, explosive expression of emotion is characteristic of very young children. Crying is normal at the early levels of development; anger at physical restriction or thwarting of immediate desires is characteristic of early preschool levels; fears are usual and numerous throughout the childhood period. In the process of development from childish ways of expressing emotion there are many stages at which behavior is explosive, resistant or fearful. Parents and teachers who understand children will know when such behavior is a phase of growth and when it is a symptom of something wrong in development.

True behavior problems are those forms of behavior which indicate that something is wrong with the child himself or with the environment in which he lives. For example, perseverance of an early form of emotional behavior into later ages, such as crying over minor physical hurts at 6 or 8 years of age, or bursting into anger over simple frustration at 15 or 16 years of age would indicate that the child is not developing in these categories since he is behaving as a much younger child would. This may be an indication of a basic retardation in general growth, as would be true of a feeble-minded child who, even with expert treatment, lags behind the normal rate in all areas of physical and psychological control. It is far more often an indication of wrong treatment of a potentially normal or superior child by the adults who have charge of him. We shall refer throughout the book to the types of behavior which, though troublesome, are merely aspects of growth as it occurs within the framework and under the pressures of our particular social culture. When behavior cannot be understood in terms of a passing stage of growth, or a fairly normal attempt on the part of the child to orient himself to the reasonable frustrations and pressures of life, then the reason for the retardation or the deviation should be sought. If the behavior is excessively immature, excessively explosive or excessively withdrawn, the services of a skilled guidance person (preferably a child psychiatrist if one is available) should be obtained.

Projective Methods of Studying and Treating Behavior. As children move forward in emotional growth from overt and obvious forms of expression of emotion to more subtle and socially acceptable forms it becomes less possible to judge what their inner feelings and reactions are. If one is to understand and to help children it is important to know what motivations and feelings are potent in determining

their behavior. The fact that children sometimes reveal feelings and motives in make-believe settings or in play situations has led to the use of projective methods for discovering inner feelings and to the projective or play technique for helping children to straighten out inner conflicts which lead to difficult behavior (Hartley and Goldenson, 1957).

Projective or play techniques and projective tests (Fig. 26) analyze children's attitudes and feelings through studying their reactions to structured or unstructured situations, their play, their drawings and paintings, their stories or any other creative activity. Projective tests yield a workable measure of generalized anxiety drive that seems to be independent of specific situational variables and may be related to constitutional factors (Cox, 1962). Some children have an anxiety connected with any test situation, but the projective test situation is interesting enough that most children regard it as a game (Sarason, 1960).

Nickols (1963) suggests that, for some children, the scores on such a test as the California Mental Health Analysis may be strongly influenced by the subject's attitudes about himself. Sarason et al. (1960) warn that how a child perceives himself in relation to a given situation affects his test performance and that, for many children, a degree of anxiety is aroused which interferes with maximum use of the child's potential to perform. Mathews and Levy (1961) found that certain projective and anxiety tests are inappropriate for retarded children.

A number of projective tests are designed to assist observers in studying children's feelings. Tyler (1963) gives an excellent list of these.

FIGURE 26. Administering a projective test. (Courtesy The Merrill-Palmer Institute.)

These tests and devices for working with the inner lives of children are useful not only to diagnose children's inner troubles but also as ways of helping children to overcome inner conflicts and tensions by making it possible for them to express through play, or in the special circumstances set up by the therapist, the ideas and feelings that their environment will not permit them to express otherwise. The basic assumption behind the use of this technique is that children express their inner emotional needs through their work or play if they are permitted to do so. Particularly in free, creative work does the child utilize his clay, or paint or blocks as a means of expressing inner wishes and inner conflicts. He does so, too, in free play, utilizing games, dolls or imaginative situations to say what he dare not or cannot say directly. Intelligent and understanding study of the creative work and free play of individual children reveals much of their inner emotional life. Properly interpreted, such "projections" of the child's self into his work or play can help teachers to understand and to guide individual children who may need special help. Through the use of the projective technique with children, teachers, if properly trained to do so, are urged not only to interpret children's work and play but also to provide special opportunity for creative work and free play that can be utilized by children for expression and, therefore, relief of inner conflicts. Properly directed, such "corrective" work or play can be used as a means of correcting emotional difficulties.

Cohn (1962) defines doll play, when used as a diagnostic or treatment instrument, as a "a semistructured projective technique which cannot be described with great precision because there has been a considerable range in the interpretation of this technique. The two major categories of the doll play techniques that appear in the literature are 'free' or unstructured doll play . . . and a structured play test in which the family dolls are presented in conflict situations and the child resolves these conflicts through play." Another use of structured doll play has taken the form of an animated story in which the child manipulates the dolls and toys as he makes up a story. Cohn adds that almost all of the material on doll play aggression has come from the studies using unstructured doll play. He points out that the differences in results from these studies may arise, in part at least, from the differences in details of procedure used in the studies.

In spite of these differences, studies of play that uses dolls and toys creates a medium that allows the child to create a miniature world in which his own motives, thoughts and emotions can dictate what will occur (McNeil, 1959).

Doll play is a particularly good method for preschool children since it requires less verbal skill than other projective techniques such as the Thematic Apperception Test. It is flexible enough and anonymous enough to allow free expression of the child's real feelings, and yet is adaptable to experimental purposes because of its simplicity, its appeal to young children and its ease of administration (Ammons, 1953).

It is interesting to note that in a compendium, *Recent Developments in Psychoanalytic Child Therapy,* edited by Weinreb (1961), the contributions, with one exception, were written by women. This would appear to be a recognition of the usefulness of women as child analysts, and is a probable indication that women find transfer from children to be accomplished fairly naturally.

There is a natural temptation for amateurs or novices, people who have

4

INFLUENCES OF NUTRITION AND ROUTINES ON GROWTH

The potentialities for growth, as determined by heredity, cannot be realized without adequate food and conditions favorable to the physiological processes that convert food into body tissues. Even the life processes of the first cell, or the beginning of life, depend upon specific chemical substances that are present in the cell itself. As the cell multiplies and differentiation takes place, different types of cells acquire different structures and, therefore, have specific needs. Bone, for example, must have calcium and phosphorus in relatively large quantities for its growth. Muscles demand proteins and certain inorganic salts; nerves require, among other things, a fairly large supply of fatlike substances called lipids.

Going hand in hand with the structure of these tissues are their functions. These functions depend upon the constitution of the tissues plus the materials that are brought to them by the fluids in which they are bathed. Thus, the normal beating of the heart depends upon the concentration of the calcium salts, and the quantitative relationship of calcium to sodium and potassium in the fluid which bathes the heart muscle. Nerve reactivity, also, is dependent upon these minerals. The secretions of the digestive tract and of the endocrine glands require supplies of specific substances, as will be shown later.

Food, the source of these necessary materials, becomes all important for

the mother during the prenatal period and for the child after birth in providing the body with its needs for growth and activity.

IMPORTANT CONCEPTS

As a basis for understanding the role of nutrition in the development of an individual, certain fundamental concepts need to be kept in mind. By so doing the student is able to view with perspective the significance of food and its use in the body during the growing years.

Wholeness. The concept of wholeness, as discussed in Chapter 1, applies in the area of nutrition. What people eat and how that food is utilized by the body in promoting growth and well-being affects and is affected by not only the physical but also the emotional, social and cultural aspects of life. It is important to be aware of the multidisciplinary nature of the child and his relationship to his environment when appraising the influence of nutrition upon development. Emotions can affect a child's acceptance and use of food. An individual's food can also contribute to his emotional stability. Social prestige and religious practices play important roles in the acceptability of foods. Since man satisfies his nutritional needs according to the food resources of his environment, a disturbance of these food resources, such as can occur in times of the devastation of war or drought or in times of change from diversified farming to the raising of a single money crop, will affect the nutrition of the people. De Castro (1952) gives several dramatic examples, one of which is that of the Bantu in Africa. Before the arrival of the European settlers the Bantu, who lived by raising cattle, growing corn and hunting, were strong and healthy. With the disorganization of native economy the diet became almost exclusively corn. Pellagra, a deficiency disease unknown 40 years ago, became endemic.

The concept of wholeness applies also in nutrition in the reliance upon natural foods rather than purified foodstuffs in satisfying nutritional needs and in providing a satisfactory balance of nutrients. In order to build new protein for body tissue, all the essential amino acids must be provided at approximately the same time. Too few calories may interfere with the retention of nitrogen which is necessary for the building of protein (Macy, 1951). The lack or overabundance of one nutrient may affect the body's use of another as, for instance, the need for vitamin D in the laying down of calcium in bone. Thus it is better to think in terms of a well-balanced diet rather than to focus attention upon one nutrient while at the same time minimizing the importance of others. Natural foods are important because they contain more of the essential nutrients than refined foods and may also provide other nutrients whose values are not known at present.

Flexibility. The body has an important degree of flexibility in its nutritional processes. Studies with "tagged" atoms demonstrate that nutrient materials are distributed promptly and widely to the different organs and tissues of the body where they may be used in the replacement and renewal of cells and molecules as well as in the building of new tissue. To say that the body is like an engine is not wholly true, since the parts of an engine do not change, whereas those of the body are in a constant state of activity or flux. Even tissues such as fat, bone and tendon, which at one time had been thought not to change after once formed, are now known to be changing constantly. Thus, tissues may be called upon to

provide nutrient materials as well as to receive them.

Flexibility is also demonstrated by the body's ability to adapt itself within limits to different nutritional levels. Thus, when food is limited the body can still function by reducing the amount of energy it expends through lessened activity, loss of weight and a slowing down of the basal metabolic rate (the amount of energy necessary for bodily functions).

Individual Differences. The concept of individual differences also discussed in Chapter 1 applies in the area of nutrition, as shown by Williams (1956). Different children varying in size and rate of growth will likewise differ in the quantity of energy and nutrients needed for that growth. Children are also different in their ability to utilize foods so that some will need more to fulfill their needs than will others. Studies have shown that children eating the same food and living under the same conditions will require different amounts of a substance as, for example, calcium. This means that allowances must be made for this variability when providing food for children. A liberal rather than a minimal intake, according to nutritional knowledge today, is advisable whenever possible since it is impossible to determine the metabolic efficiency of each child in order to ascertain his particular requirements for maintenance and growth.

FOOD AFFECTS HEALTH AND GROWTH

It is an accepted fact that food affects health and growth, that nutrition can be a limiting factor in growth and development. Undernutrition and malnutrition are found all around the world, but they are more prevalent in some areas than in others. Undernutrition is a condition resulting from inadequate food in which the deficiency is quantitative rather than qualitative, i.e., a deficiency of calories with the nutrients fairly well balanced. Such was the condition in much of Europe during and directly following World War II, described in Studies of Undernutrition, Wuppertal, 1946-1949 (Members of the Department of Experimental Medicine, 1951). In malnutrition, on the other hand, there is a deficiency of specific nutrients, e.g., the deficiency of vitamin B complex found in the Japanese prison camps (Smith, 1951). In the United States, whose economy is such that sufficient food is available to almost everyone, malnutrition is not so much a problem of groups as of individuals. There is even the problem of overnutrition's leading to obesity. In technologically underdeveloped areas with low per capita supply of food in general and of certain kinds of nutrients in particular and limited purchasing power, evidence of the relation of nutrition to health and growth can be observed. Evidence also comes from comparisons of children with and without nutritive failure, from observations of deprivations in war-torn countries and under experimental conditions, and from observations of the effects of supplements added to inadequate diets.

Diet and Physical Status. The Institute of Nutrition of Central America and Panama, which has been studying the nutrition problems of that area, reports on the growth and development of children and their dietary habits (Scrimshaw, 1955). In these countries (except in Panama where rice plays an important role) corn and beans are the predominant foods. The diet is lacking in "protective" foods. The basic deficiencies are in good quality proteins, vitamin A and riboflavin. Calcium is also lacking when the corn used for making tortillas is not treated with lime. Generally, infants are breast fed with no sup-

plementary feeding until about 1 year of age, at which time certain of the adult foods, which are low in nutritive value, are given. Malnutrition is almost universal among the children in low income and rural groups at this age. The weaning and preschool years are the most vulnerable ones. The infants observed followed the Iowa curves in height increments to about 6 months, after which time the increments decreased. During the school years the height curves generally paralleled those of well-nourished children. Because there is no later acceleration to compensate for the deceleration in later infancy and preschool years, the adult stature is short. Weight curves generally have a similar pattern. It is believed that this type of growth curve can be attributed more to environmental than to genetic factors since the retardation is nearly as marked among Costa Rican children of almost entirely European origin as for children in Honduras, El Salvador and Guatemala with very considerable Indian admixture. Also, experimental feeding studies have shown short-time growth rates comparable to the standards (Scrimshaw and Guzmán, 1953).

A somewhat similar pattern was shown in skeletal development; namely, agreement with United States children (according to the Greulich and Pyle standard) until about 1 year of age, an approximate net gain of only 1 year during the period from 1 to 4 years and, during the school years, gains which paralleled those of well-nourished children. Thus, during the school years, these children did not tend to make up the loss of about 2 years in skeletal development acquired during the early years.

Protein malnutrition is found in all the technologically underdeveloped countries. A severe form, called kwashiorkor, which is found among children from the time of weaning to about 4 years of age, is being studied extensively. Children with kwashiorkor, whether in Latin America, Africa or India, lag in growth in weight and in skeletal development (Waterlow, 1955).

A study in Uganda in which children with kwashiorkor were compared with healthy children of the same ethnic stock showed that the healthy group were either similar to United States children or slightly advanced in skeletal development, whereas those with kwashiorkor were retarded (Jones, 1959).

In the United States, Spies and his co-workers (1953) have compared the growth of children with and without nutritive failure. These children were of the same ethnic stock and lived in the same geographical area. The children with nutritive failure at 3 years of age (youngest age group) showed a substantial lag in height and weight. This weight lag increased progressively in boys and girls to 15 years and 9 months (oldest age group). The height lag increased progressively for boys; in girls it remained fairly constant. Average difference in height throughout the age range was 2.42 inches for boys and 1.77 inches for girls. Range extended from mean of 1.11 inches at 12 years to 5.61 inches at 14 years for boys, and from 0 at 7 years, 3 months to 3.60 inches at 13 years, 3 months for girls. The speed of growth as determined by the Wetzel Grid (see Chapter 7) was slower for those with nutritive failure than for those without nutritive failure. Children with nutritive failure also had a disturbed pattern of skeletal development. The pattern included a slower rate of skeletal maturation, a high degree of asymmetry in the development of component parts of the skeleton, a high frequency and variety of anomalous bone centers, a persistence of transverse lines in the shafts of the long bones indicative of disturbed bone

metabolism and delayed fusion of epiphyses with shafts.

On the other hand, children of today in countries with higher standards of living are generally taller and heavier than children of former generations and are maturing earlier. Nutrition is thought to be one of the factors associated with this increase.

In this period when children have been growing better, there have been shifts in the relative importance of various foods that have been consumed in the United States. There has been increased consumption of dairy products other than butter, citrus fruits, green leafy and yellow vegetables, on the credit side, and refined sugar, on the debit side. These trends, except for the sugar, have enriched diets from the nutritional point of view and indicate that people are eating more foods that are important in promoting health. The enrichment of wheat flour and corn meal, with thiamine, riboflavin, niacin and iron in both and additional calcium in the latter, of converted rice, the fortification of margarine with vitamin A and the fortification of some milk with vitamin D have also contributed to improving the quality of the American diet. Sebrell (1953) reports that the average American in 1945, compared with the period before enrichment was introduced, received in his food 27 per cent more thiamine, 19 per cent more niacin, 17 per cent more riboflavin and 17 per cent more iron. The greatest increase occurred in the low income groups.

There are vast differences in the food eaten in families. Income, availability of foods, family size, management and food habits are factors contributing to these differences. Many families still have inadequate food even though, according to Stiebling, more than a decade ago the food available in the United States, if shared in accordance with need and used with discrimination, was sufficient to give everyone an adequate diet. Studies of differential growth in the different socioeconomic levels point to nutrition as a contributing factor. More information regarding the long-term effects of diet upon human beings is needed.

Effect of Nutritional Deprivations during Wartime. Growth of children in weight and to a lesser degree in height has been shown to be affected during wartime by restrictions in food intake caused by scarcity of food. The extent of the growth deficit is related to the severity of the undernutrition or malnutrition. Older children tend to be affected more than the very young, perhaps because the younger children in the family may receive a relatively larger share of the available food than the older ones.

Evidence comes from observations during World War II in France (Trémoliéres, 1950), Belgium (Ellis, 1945), Greece (Valaores, 1946), and Holland (Jonxis, 1946). In Holland in 1945, for example, most children over 1 year of age lost weight, and toward the end of the famine period they ceased growing in height. In Greece 55 per cent of the 3 to 8 year olds were underweight for height in 1942 and 1943 and 64 per cent in 1944. In a French study of children from 6 to 20 years of age the 13 year old girls were the most vulnerable (Trémoliéres, 1950). Following World War II, observations of French children and those of Dutch children liberated from Java and sent to Australia for rehabilitation indicate that children can recover from periods of deprivation *if they have not lasted too long* and will catch up in growth in height and weight. However, children who continue to grow up with inadequate food will not have the opportunity for rehabilitation and thereby will be unable to achieve their potential for growth.

Minnesota Study of Human Starvation. The war studies cited above refer to the effect of underfeeding upon height and weight. Information on the effect of undernutrition upon the physiological processes of such children is lacking except indirectly by the manifestations of such characteristics as chronic fatigue, lack of vigor, listlessness and inactivity as noted, for example, by Stuart (1944) during World War II in a group of French children between 12 and 18 years of age. It seems pertinent, therefore, to cite briefly some of the results of the Minnesota Study of Human Starvation, which demonstrated the effect of severe underfeeding and later restoration of adequate food on a group of young men (Keys, 1950). Thirty-two mentally and physically healthy young men, living under carefully controlled conditions, were observed and tested during three successive periods: 12 weeks of adequate diet, 24 weeks of semi-starvation diet, 12 weeks of increased food intake.

It was found that all parts of the body underwent change during semi-starvation. Much of the fat disappeared, active tissues – especially muscles – decreased, more water was held in the tissues, while the bones changed relatively little. The men's physiques changed because of the loss of subcutaneous fat and muscle. Bodily processes slowed down, including circulation; basal metabolism was lowered; and blood sugar decreased. The skin was cold to the touch and the men complained of feeling cold. Sexual functions were reduced; sperm were less mobile and lived a shorter time. Moderate anemia developed. Strength and endurance decreased markedly. The men complained of feeling weak. Slowing down of voluntary movements was observed. Coordination deteriorated whenever steadiness of the whole body was involved. On the other hand, no change was observed in accurate movements of small muscles nor were sensory mechanisms disturbed. Capacity for work, both in long, steady and in strenuous activity, decreased. This was shown both in the work done and the lowered efficiency of circulatory and respiratory mechanisms. These physical changes were accompanied by changes in behavior.

When the food was increased the men improved, although the response was not prompt nor synchronized for all structures and functions. After 33 weeks of rehabilitation the men were substantially back to normal. During that time water in the tissues decreased. Fat increased more rapidly than muscle. Muscle regained slowly; likewise, muscular strength and endurance were slow to return. The extremely slow recovery of strength was reflected in a delayed return to the men's former capacity for work. After 20 weeks of rehabilitation the endurance of the men was still far below that at the beginning of the experiment. Functioning of heart and lungs and energy metabolism gradually improved. The anemia gradually disappeared. Sexual functions, as measured by mobility and longevity of sperm, also gradually improved and returned to normal, generally about the time of renewal of sex interest and desires. This experiment has demonstrated that the body does not respond immediately to improving the food needs of men after a period of starvation but, rather, that the process of recovery is gradual and tends to be slow. While the result of this experiment cannot be applied directly to children, it seems reasonable to assume that functional changes occur in children as well as young adults under conditions of severe underfeeding.

Effect of Limitation of Calories on Growth. Even healthy children living under satisfactory conditions

may at times have too few calories to provide for good growth. Macy et al. (1951), in a study of children living in an excellent institutional environment, found that too few calories may not only interfere with satisfactory weight gains but also may reduce the amount of nitrogen available for the building of body tissues. One boy who was losing weight and nitrogen gained weight and retained nitrogen when 10 calories for every kilogram (2.2 pounds) of his weight (a total of little more than 200 calories, equivalent to about a glass of milk and a slice of bread and butter) were added to his diet daily.

Supplementation of the Diet. Studies have shown that improvement of inadequate diets can improve the health and growth of children. Spies and his co-workers (1949) have demonstrated that milk added as a supplement to inadequate diets of malnourished children will improve their growth. Children of 4 to 15 years of age during a 20-month period of supplementation averaged an increased monthly gain of 3.6 per cent in height and 29 per cent in weight. Six quarts of milk per week were added to a diet deficient in calories and in several of the essential nutrients. The milk was given as reconstituted milk solids equivalent in protein value to that contained in six quarts of cow's milk. Some children received whole milk; some received skimmed or nonfat milk. When the milk was withdrawn for the following 12 months the improvement ceased. These children gained an average of 1.23 cm. (.48 in.) and 1.35 kg. (3 lb.) more than another group of ethnically and nutritionally comparable children. But even with the supplement very few of the children completely reduced their growth lag. This was thought to be due, separately or in various combinations, to too little additional food, too little time on the experimental diet, imbalances in the diet, and irreversible changes produced by long-term undernutrition.

A second study (Spies, 1953) was made of the skeletal maturation of 82 children, half of whom received a dietary supplement of dried milk equivalent in protein value to three quarts of milk per week for 40 months, after which the supplement was increased to twelve quarts of milk per week for 6 months. The other half of the children served as controls. During the 40 months little difference in progress in bone maturation was found between the two groups. However, when 19 of the experimental group were given twelve quarts of milk a week they increased their rate of bone maturation by 80 per cent over that of the former period and far surpassed the other children who had no milk or only three quarts. Whole milk and skimmed milk were equally effective. Apparently, the three quarts of milk per week did not supply sufficient bone-forming nutrients to produce a change. The quantity as well as the quality of a supplement is important.

In India a multipurpose food composed of groundnut flour and Bengal-gram flour fortified with calcium phosphate, thiamine, riboflavin, vitamins A and D, which provides protein, minerals and vitamins, is being used to supplement inadequate diets of children. Its value has been tested in an orphanage where a group of girls between 4 and 15 years of age were given 2 ounces of the multipurpose food daily for 5 months in addition to their regular diet. Those receiving the multipurpose food made significantly greater gains in height, weight and hemoglobin levels than did a group who served as controls (Subrahwanyan et al., 1957). Metabolism studies of a group of these children, aged 8 to 11 years, revealed that those receiving the supplement retained significantly more nitrogen,

calcium and phosphorus than those who had no supplement (Joseph, 1957).

In Nigeria the limiting factor in the growth of the Munshi children was found to be iodine. After 4 years of feeding iodine, children were, on the average, about 4 inches taller than their parents (McCulloch, 1955).

Pett (1953), in a Canadian orphanage, was able to demonstrate improved weight, a decline in respiratory infections, enlarged or infected tonsils and various mild illnesses, and unmeasurable benefits such as liveliness, better work in school and more energy for recreation when the milk intake was increased from 8 to 24 ounces per child daily.

Improvement in health and growth following the introduction of a supplement will depend on how far it makes good the specific deficiences of the child's diet.

EFFECTS OF NUTRITION ON BEHAVIOR AND MENTAL PERFORMANCE

Behavior. Nutrition can affect behavior and emotional adjustment. However, to demonstrate a clear-cut relationship between nutrition on the one hand and behavior and emotional adjustment on the other is extremely difficult since nutrition is only one of a number of factors affecting the expression of interaction of the individual and his environment. Nevertheless, the effects of undernutrition or malnutrition can be discernible in situations which are complicated by poor physical environment and emotional stresses and strains. Periods of severe underfeeding provide evidence. Spies et al. (1952) described a child whom they had observed from 5 to 12 years of age. He was a white boy, the fourth child in a family of ten that had lived on a diet consisting chiefly of corn bread, biscuits, fat pork, sugar, occasionally turnip greens, corn, tomatoes and berries in season. Rarely did this child have any milk, eggs, meat, fish or cheese. At 5 years of age he was retarded in growth and showed clinical evidence of deficiencies in thiamine, riboflavin and niacin. His mother reported that he had had "cracks" (symptom of riboflavin deficiency) at the corners of his mouth most of his life and frequently his tongue was red and sore (symptom of niacin deficiency). During the following three years his mother complained that he was "fractious," and his teacher stated that he did not concentrate on his schoolwork, had poor grades and was quarrelsome. At 8 years and 9 months he was given a skimmed milk supplement which increased his intake of protein, calcium, thiamine, riboflavin and niacin. No other changes were made in his life. During the first year there was little change in his lip and tongue condition, his disposition and his school grades. Following that year gradual improvement in lip and tongue symptoms was noted. His mother reported great improvement in his disposition. His teachers said that he could concentrate better on his studies, his school grades had improved and his behavior was excellent. This relatively small improvement in his diet had contributed slowly to somewhat better living for this child even though it was insufficient to improve his growth rate in height and weight.

Children with kwashiorkor, a severe type of protein malnutrition, have a characteristic behavior. This behavior may have another contributing factor in addition to that of protein malnutrition, namely, an unsatisfactory relationship between mother and child (Gerber and Dean, 1956). These children are dull, apathetic, miserable. They sit without moving, indifferent to their surroundings; they rarely cry

or scream, just whimper. When they are cured, the behavioral change from "peevish mental apathy" to "impish humor and vitality" is striking (Brock, 1952). This protein malnutrition with these behavior characteristics comes during infancy and the preschool years when healthy children are actively learning about the world around them, accommodating themselves to it, making their first social contacts and expanding their personalities. If prolonged, this interference with such activities may leave long and perhaps permanent scars on the children's developing personalities. Such conditions raise the question as to whether some of the lassitude and disinterest in the world may have a nutritional component.

Observations during real life situations of undernutrition have been corroborated by the changes in behavior of the subjects of the Minnesota study on starvation. The progressive anatomical and biochemical changes that produced sensations, drives and limitations to physical functions rendered the men increasingly ineffective in their daily life. During the period of semistarvation men who had been energetic, even-tempered, humorous, patient, tolerant, enthusiastic, ambitious and emotionally stable became tired, apathetic, irritable, lacking in self-discipline and self-control. They lost much of their ambition and former self-initiated spontaneous physical and mental activity. They moved cautiously, climbed stairs one step at a time and tended to be awkward, tripping over curbstones and bumping into objects. They lost interest in their appearance. They dressed carelessly and often neglected to shave, brush teeth and comb their hair. They became more concerned with themselves and less with others. It required too much effort to be sociable. Their interests narrowed. The educational program, which was to prepare them for foreign rehabilitation work, collapsed. Humor and high spirits were replaced by soberness and seriousness. Any residual humor was of a sarcastic nature. They had periods of depression and became discouraged, in part because of their inability to sustain mental and physical effort. They were frustrated because of the difference between what they wished to do and what they could do. They found themselves buying things which were not useful at the time. They stopped having "dates." All sex feelings and expression virtually disappeared. All the time they were being distracted by hunger sensations and showing great concern about and interest in food.

When their food was increased during the rehabilitation period their psychological recovery was somewhat faster than their physical improvement, although many months of unlimited diet passed before recovery was complete. Emotional stability and sociability were regained more rapidly than strength, endurance and sexual drive.

The sudden feeling of improvement, however, was temporary. Morale became low because many anticipated quick, complete recovery. As energy increased, they no longer were willing to accept conditions unquestionably and showed annoyance at restrictions. Many grew argumentative and negativistic. Humor, enthusiasm and sociability reappeared; irritability and nervousness diminished. The feeling of well-being increased the range of interest. The sense of group identity which had become strong during the semistarvation period was dissipated as men began looking forward to making plans for their futures. An interest in activity and sex increased. Their concern about food decreased after a period of insatiable appetite when they were first permitted to eat all they desired.

These were general trends in behavior changes, but considerable individual differences were noticed in the men's ability to withstand the stresses and strains of the experience, which appeared to bring out their innate strengths and weaknesses. Some of these behavior changes were reflections of personality changes measurable by psychological tests (Keys, 1950).

Intelligence. It has been shown that undernutrition or malnutrition can affect mental activities or the way an individual uses his mental abilities. Gross malnutrition during the first year of life and to a greater or lesser extent from then on can limit the development of head circumference, thus limiting brain growth and subsequent intellectual development (Stock and Smyth, 1963). However, mental capacity seems to withstand deprivations that will affect mental activity. In the Minnesota study, according to both clinical judgment and quantitative tests, the men's mental capacity did not change appreciably during either semistarvation or rehabilitation. The subjective estimates of loss of intellectual ability may be attributed to physical disability and emotional factors. Whether similar resistance exists at earlier ages when the nervous system is immature has yet to be demonstrated.

There have been some investigations of a relationship between some of the B complex vitamins (i.e., riboflavin, thiamine and niacin) and intelligence (Guetzlow, 1946). A well-controlled experiment with men, planned to test restriction, deprivation and subsequent supplementation of thiamine, has been reported but no comparable experiments have yet been done with children. For a time young men were partially and then severely deprived of thiamine. No change in performances on tests of intelligence occurred, even though during deprivation there were significant changes in several aspects of motor performance, in pressure pain threshold and increases in scores of hypochondriasis, depression and hysteria in the Minnesota Multiphasic Personality Inventory (Brozek, 1957). However, there is little doubt that definite, prolonged vitamin deficiencies, especially of thiamine and niacin, will eventually result in disturbed mental function.

Studies of the effect of thiamine supplements upon learning ability have given no assurance that adding thiamine to the diet of school-age children will be followed by increased ability to learn. Harrell's (1946) reported positive effects were not confirmed when Robertson et al. (1947), using identical twins and thus controlling the genetic factor, fed thiamine supplements to one of each of the twins, all of whom lived at home.

At the present time we have no means of ascertaining the effects of inadequate diets fed to children throughout their growing years. When the mental abilities of children thus deprived have been followed throughout their growth period there will be better evidence to ascertain to what degree nutrition affects the development of intelligence.

Evidence has been cited that underfeeding has a real effect upon the well-being of an individual and is reflected in his behavior. It would be wise, therefore, to keep in mind the nutritional needs of children and to meet them wherever possible. When lack of spontaneous activity, undue fatigue and irritability are apparent it would be profitable to investigate nutrition along with many other factors.

NUTRITIONAL NEEDS OF CHILDREN

There are two fundamentally different kinds of food needs, termed *energy requirements* and *structural require-*

ments. The body requires energy for many activities, such as beating of the heart, breathing, digestion of food and voluntary muscular activity. Energy is also needed for growth. This energy requirement, expressed in calories (total calories or calories per pound of body weight), is obtained chiefly from carbohydrates and fats.

Energy Requirements. The amount of energy needed in terms of calories varies from individual to individual and is dependent upon a number of variables, none of which can be considered independently but rather as part of a constellation. It differs with *size.* A large child requires more energy-producing food than a small child. It differs with the *rate of activity of the body processes while at rest,* that is, with the basal metabolic rate. The faster the rate of basal metabolism, meaning the faster the heart beat, respiration, etc., the greater the number of calories used in a given time; and, conversely, the lower the rate, the lower the number of calories needed.

The energy requirement differs, too, with the *amount of voluntary activity.* A very active child requires more calories per day than a quiet one. The same child will need more calories during a day of vigorous activities than during one of quiet activities. In a series of studies 9 to 11 year old boys increased their energy output over their basal metabolism 202 per cent for dressing and undressing, 44 per cent for sitting and listening to a recorded story, 54 per cent for sitting and singing, 63 per cent for quiet play and 219 per cent for cycling. In the first three activities, girls exerted less energy than boys (Taylor, C. M., et al., 1948a, b).

Energy requirements differ also in accordance with the *efficiency of the body in using foods.* Some bodies are more economical in the use of foods than others. In some cases food is more easily digested and absorbed than in others. In all individuals some food value is lost in bowel elimination, but the amount varies considerably from child to child. Finally, the need for

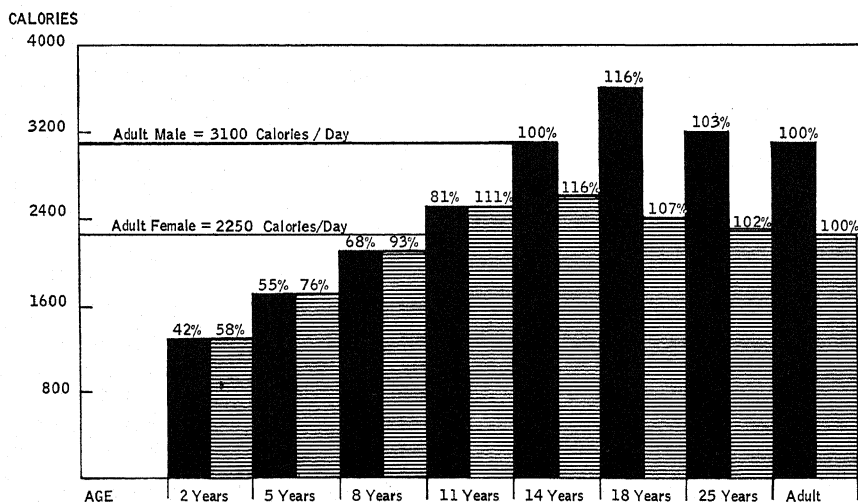



FIGURE 27. Calorie needs of boys and girls expressed as per cent of adult needs. (Calorie needs represented by N.R.C. allowances, using as male and female adult needs a value midway between the 25 and 45 year allowances.)

Adult male —3100 cal./day—represented by solid bars on graph.
Adult female—2250 cal./day—represented by shaded bars on graph.

calories depends on the *rate of growth.* The fast-growing child will need more calories than the slow-growing child. During the periods of his life when the impetus to grow is most intense, infancy and early adolescence, the amount of energy required for growth will be greatest. Johnston (1957) shows that the caloric requirement of the adolescent girl parallels her rate of growth. It is not surprising that the baby eagerly demands food and that parents of pubescent children complain that their boys and girls cannot be filled up. In order to permit growth there must be a surplus of energy over the actual energy expended by the body.

In proportion to their weight, children's food needs are greater than those of adults because of children's relatively greater basal metabolism, their tremendous activity and their growth.

If sufficient food is available and the child is well and has a good appetite, he will meet his energy needs. A well-rounded diet, with emphasis on the "protective" foods, will include sufficient calories.

Structural Requirement. The structural requirement covers the needs for materials that go to make up tissues and to regulate the functions of those tissues. The child does not require in a ready-made form all the chemical substances which he uses for building tissues; his body can make some of them if given the necessary materials. The necessary food elements, or nutrients, are something like 40 in number. They include some of the amino acids from proteins, at least one digestive product of carbohydrates (glucose), some unsaturated fatty acid or acids (derived from the digestion of fats), minerals and vitamins. The body needs all of these in adequate amounts for the building and repair of its tissues and for these tissues daily activities. Since all foods do not contain all of these nutrients, a balanced diet of "protective" foods, that is, foods rich in the essential nutrients, is necessary.

Importance of Minerals. Minerals serve as *constituents of tissues.* Calcium and phosphorus are responsible for the rigidity of the bones and teeth. The softer bones of children contain less minerals than the firmer bones of adults, and the process of hardening, called ossification, demands calcium and phosphorus in generous quantities. An inadequate amount of these minerals may result in poor teeth and poorly formed bones. Poor teeth are a barrier to good health and attractiveness. Poorly formed bones detract from the attractiveness of an individual and limit his physical efficiency. These minerals, together with others, are also a part of the soft tissues of the body, such as muscle, nerve and blood cells. Phosphorus and iron are necessary components of every living cell, in both the nucleus and cytoplasm. Phosphorus is an important element in muscle, glandular and nervous tissues. Iron is a part of hemoglobin, that substance in the red blood cells which makes it possible for oxygen to be carried from the lungs to the various parts of the body, thus serving in the function of respiration and contributing to the life activities of all the tissues. Iron cannot be available for this function unless copper is also present.

Minerals serve as *regulators of body processes.* The part played by minerals in the beating of the heart and in the activity of the nerves has been mentioned. For coagulation of the blood the body needs calcium. Too little calcium in the blood at the time of an accident may result in excessive bleeding and perhaps death. Phosphorus takes part in the chain of events in muscle activity and in the transfer of energy. The digestive juices, such as salivary, gastric and intestinal

juices, depend upon minerals for their acidity or alkalinity. Minerals regulate the flow of liquids by means of which substances are absorbed, passed to and from body cells and excreted through kidneys or intestines. Iodine is a part of thyroxin, the hormone of the thyroid gland. Without iodine the proper functioning of this gland, normal growth and the maintenance of health are impossible (Chap. 2). These minerals play many and varied roles in the body. Their importance cannot always be gauged by absolute amounts. Relative amounts or the balance between these minerals must be considered as well.

Importance of Vitamins. The vitamins, as regulators of body processes, have a vital role to play in keeping children well and furthering their development. The vitamins now recognized as contributing to the health and growth of children and youth are vitamins A, D, C, K, thiamine, riboflavin, niacin, B_6, folic acid and B_{12}. There are also vitamins of undetermined significance, such as others in the B complex group and vitamin E. The value of the latter to man has not been definitely established. Vitamin K aids in the formation of prothrombin, which is associated with the mechanism of blood clotting. Sufficient amounts of K to meet human needs are produced by bacteria in the intestines except shortly after birth, before the intestinal flora has been established.

Vitamin A, or carotene, its precursor which can be converted by the liver into vitamin A, is a necessary part of the visual process and thus is associated with the ability to see in dim light. A lessened ability to see after the intensity of the light has been diminished (night blindness) may occur because of a vitamin A deficiency. Vitamin A is also necessary for maintaining the health of epithelial tissue, namely, the tissue of skin, covering of the eye, the lining of the respiratory, alimentary and genitourinary tracts. A deficiency of vitamin A structurally impairs what the Journal of the American Medical Association calls "the body's first line of defense." With the change in epithelial tissue local infections occur and bacteria may penetrate through the walls of the injured membrane which is no longer able to resist their invasion. In addition, it is necessary for the orderly development of bones and teeth. It seems to direct the activity of the two types of cells involved in the process of bone formation (Mellanby, 1950). It is also essential for the formation of the enamel of teeth.

Vitamin D is essential for the normal growth and mineralization of the bones and the teeth. The body cannot make proper use of the calcium and phosphorus supplied by food unless vitamin D is present. Rickets in infancy, and occasionally in adolescence, demonstrates failure in calcification. In addition to preventing the condition of rickets, a liberal amount of vitamin D tends to promote growth, provided there is sufficient calcium and phosphorus to meet the needs of growth of soft tissues and bones. According to infant studies, there appears to be an optimum of vitamin D for promoting growth beyond which increasing the supply has a depressing rather than a stimulating effect upon growth in length. The effect of D on the rate of growth of bones in infancy points to the need for sufficient vitamin D throughout the growth period. The need for vitamin D in older children has also been demonstrated.

Together with other factors, vitamin D is of importance in the formation of normal teeth. The fact that calcium and phosphorus constitute a large percentage of tooth structure is indicative of the importance of vitamin D during tooth formation.

Thiamine is one of the vitamins in the B complex. Others associated with human nutrition are riboflavin, niacin, folic acid, B_6 and B_{12}. (Other factors in the B complex will not be included in this discussion since they present no practical problem in child nutrition.) Thiamine is essential for the maintenance and normal function of the nervous system. It has been known for a long time that beriberi, a disturbance of nerves, can be prevented by including sufficient thiamine in the diet. It has been found that thiamine is necessary to carry carbohydrate metabolism through an essential step. When a deficiency of thiamine exists, certain acids, particularly pyruvic acid, accumulate in the tissues and this is apparently responsible for many clinical symptoms. A deficiency in thiamine lowers efficiency in physical work (Tuttle, 1949), mental activity (Keys et al., 1950), and in morale (Brozek et al., 1946). It takes considerable time for the physiological response to work to be affected by a thiamine deficiency and similarly for recovery to take place. Individuals differ in their response. The experiments referred to here were done with adults as subjects. As yet only clinical observations have been made on children.

This vitamin also contributes to promoting growth. It is necessary, as well, for maintaining a normal appetite and the normal motility of the digestive tract. Undoubtedly, decrease of appetite and a disturbance in digestion resulting from a lack of thiamine are factors contributing to its effect upon growth. The appetites of children are improved and food consumption is increased when thiamine, in the form of wheat germ or crystalline thiamine, is added to the diet. Since thiamine is only one of many factors contributing to poor appetite, appetite responds to its addition to the diet only when thiamine intake has been inadequate. Many appetite problems are caused by factors other than thiamine.

Riboflavin plays an important role in the internal environment in which the body cells live, where it is involved in the life processes of active cells. Riboflavin is, therefore, essential to growth and to normal nutrition at all ages. A deficiency produces characteristic changes in the lips, tongue and skin. Deficiencies in riboflavin in children have been noted. A study (Spies, 1940) of Alabama children, 4 months to 14 years of age, who had been living on diets deficient in riboflavin demonstrated that they were usually underweight and underdeveloped. Many were apathetic, indifferent and making poor progress in school. Frequently they complained of sore mouths and itching and burning of their eyes. These symptoms waxed and waned with the season and the changes in the quality of the diet. Increased exercise and infection precipitated borderline cases. Upon treatment with riboflavin the symptoms disappeared (Spies, 1940).

Niacin, like riboflavin, is involved in the life processes of the cells. It prevents pellagra with its characteristic skin lesions, digestive and nervous disturbances, provided all other essentials are included in the diet (Duncan, 1959). The deficiencies found in a pellagrin's diet are generally multiple. Children who have pellagra are usually underweight and underdeveloped. They appear to be undernourished, are irritable, easily frightened, fretful, listless, tired, apprehensive. Those who are in school make poor progress and have difficulty in concentrating. They do not have the normal interests of children; they are too tired to play but cannot rest.

Niacin and the amino acid tryptophan are interrelated since tryptophan is a precursor of niacin. When tryptophan is low, as in a predominantly

corn diet, more niacin is needed. The value of milk in the prevention or treatment of pellagra appears to depend on the sum of its niacin and tryptophan content as well as the other B vitamins.

B_6 is a member of the enzyme system in certain metabolic processes, including those of neural tissue. Arrested growth and disturbances in functioning of the nervous system have been noted to follow deprivation of B_6 in infancy (Coursin, 1956). Also, alteration in tryptophan metabolism in pregnancy has been relieved by administration of B_6 (Vilter, 1956).

Folic acid has been found to play an important part in the body's blood-forming activities. It is effective in the treatment of certain types of anemia.

Vitamin B_{12} plays an essential metabolic role and is essential for the prevention or treatment of pernicious anemia, a disturbance of red blood cell formation. Conflicting evidence of the effect of vitamin B_{12} on the growth of children has been reported (Howe, 1958). Some of these studies have also reported observations of improvement in behavior, alertness and learning ability. It would seem that B_{12} may be a limiting factor in the growth of some children and not in that of others, as is true of other essential nutrients.

Vitamin C, or ascorbic acid, is essential to the health of intercellular material which acts as a cementing substance in holding the cells of a tissue in their precise positions. Many of the effects of insufficient vitamin C in the body can be traced to this function, such as fragile bones, poor development of the teeth, and weakness. Scurvy is the result of a severe deficiency. While scurvy occurs with relative infrequency, children who habitually take too little vitamin C may show a loss of energy and fleeting pains in the joints and limbs, usually mistaken for rheumatism. By increasing vitality, vitamin C also plays a part in the body's mechanism for combating infection.

Functions of Proteins. Proteins make up a part of all body cells and participate in nearly all life processes; therefore, they are necessary for growth. Through digestion they are broken down into amino acids which are used by the body in building its tissues: bone, muscle, nerves, skin, blood, etc. Eight of these amino acids cannot be manufactured in the body and so must be supplied in the diet. Deficiencies in particular amino acids may lead to specific types of injury. For example, when arginine is deficient there is a decrease in the number of sperm and their motility (Holt, 1944). All proteins do not contain all the essential amino acids, so the kind of protein is as important as the amount. Animal proteins are richer sources of amino acids than vegetable proteins.

Proteins are necessary for the manufacture of enzymes used in digestion. They are a source of the amino acids that are a part of the hormones of the endocrine glands, such as thyroxin of the thyroid gland, epinephrine of the adrenals and insulin of the pancreas. They function in regulating the flow of fluid in and out of cells and as antibodies in resisting infection. A depletion of protein contributes to lowering the body's resistance to infection. A study in France during World War II indicated that a deficiency of animal protein was a determining factor in the incidence of tuberculosis (Marche and Gounelle, 1950).

Functions of Carbohydrates and Fats. Carbohydrates and fats, as the chief sources of energy, are necessary for growth in that they furnish energy for the growth process. Inadequate energy-yielding substances will slow down the rate of growth and if severe will affect body composition and function (Keys et al., 1950).

The body tries to compensate when there is a shortage of food energy, as happens in famine or wartime. Stuart (1945) reports that one of the common symptoms of the underfed children in France in 1942 to 1943 was a pronounced lethargy, which doubtless indicated (in addition to other factors, perhaps) an attempt to decrease the energy output as near as possible to the level of intake.

Fats and carbohydrates also furnish the body with adipose tissue, which serves as a protection against the loss of heat, acts as a cushion to the abdominal organs and is a potential source of body energy. Fat-like substances are essential parts of body cells, as has been mentioned before. These substances are found in relatively large amounts in nerve tissue and are necessary in the formation of natural vitamin D and of sex and adrenal cortex hormones. Certain fats perform another important function in that they are carriers of vitamins A and D. Glucose, a digestive product of carbohydrates, is a constant constituent of the blood. Galactose, another sugar, is apparently used in the construction of nerve cells.

Role of Water. The human being lives in water, even though it is not an aquatic species. Water is a part of every tissue in the body, even of the proverbially dry bone. In children, the percentage of water in tissues is higher than in adulthood. Mature bone contains nearly half its weight in water. About 75 per cent of muscle and at least 80 per cent of the gray matter of the brain are water. No cell can carry on its activities when it is absolutely dry and most cells must be constantly bathed with fluid in order to do their work. These cells have their food brought to them and their waste products removed by the "water route," the blood. Many of these waste products are eliminated through the urine. The digestive juices, saliva in the mouth, the gastric and intestinal juices, require large quantities of water daily. The adult secretes each day about three quarts of gastric juice, two and one-quarter pints of saliva, one and one-half pints of bile, one and one-quarter pints of pancreatic juice and one-half pint of intestinal juice. Water serves as a regulator of body temperature. Evaporation from the skin, perspiration, provides one of the most important methods of removing surplus heat from the body. Water protects internal organs. The central nervous system is bathed by the cerebrospinal fluid. Fluid also lubricates joints, thereby making movements at joints easy. Water is, therefore, tremendously important in life. Rubner (1944) estimated that a man could lose most of his stores of glycogen and of fat and even half of his protein without serious danger to life, but a loss of 10 per cent of body water is a serious matter and a loss of 20 per cent is scarcely to be endured.

The body has an effective thirst-regulating mechanism which is believed to be located, in part at least, in the hypothalamus. This generally insures adequate intake of water. Estimates of daily total fluid intake and of tap water intake consumption of normal children in four dissimilar geographic areas in the United States showed that daily total intake of fluids increased and, relatively speaking, tap water consumption decreased, with age. The authors comment that it is of basic importance to the fluoridation programs that even older children rarely drank as much as 500 ml. (about one pint) of tap water daily (Walker et al., 1963).

MEETING THE NUTRITIONAL NEEDS OF CHILDREN

Nutritional Allowances. A child's food provides him with energy and nutrients necessary for achieving a state of health and growth in ac-

cordance with his potentialities. Just as health means more than absence of disease, so the state of good nutrition means more than an absence of a gross deficiency. It is not enough to prevent a child from having rickets, scurvy or tetany. It is important that his body be ready to do what the will commands and to do it without undue conscious effort. This requires calcium-rich rather than calcium-poor bones and teeth, tissues that are well supplied with the vitamins, and a bountiful supply of red blood cells well stocked with hemoglobin. Many children today live in that twilight zone between the absence of actual disease and the level of buoyant health which liberates the body and makes enjoyment of life possible. These children are victims of a "hidden hunger" almost as devastating as "hollow hunger." Such subclinical handicaps "cripple confidence, initiative and efficiency, impair daily achievement and satisfaction, shatter ambition and cast a gray veil of uneasiness over what should be the very joy of life" (Todd, 1938). This does not mean great quantities of food but rather quantity and quality in keeping with the current knowledge of nutritional needs for development and daily living. It is possible to have too much as well as too little of something as, for example, in the case of calories and vitamins D and A.

Recommended dietary allowances have been established in several countries (Food and Agricultural Organization, 1957). In the United States the Food and Nutrition Committee of the National Research Council has formulated recommended daily allowances for specific nutrients for children and adults based on all available experimental evidence of human nutritional needs and the careful judgment of recognized authorities in nutrition. The quantities recommended in this table are allowances, not requirements, and provide a margin of safety in meeting the needs of individuals. These allowances are revised from time to time in order that the latest scientific knowledge may be utilized. (See Table of Recommended Daily Dietary Allowances.)

Foods to Meet the Allowances. Nutrients are not taken as such but are consumed in foods which are mixtures of protein, carbohydrate, fat, vitamins and salts, together with more or less residue which has no food value. All foods are not equally good sources of these nutrients. Some foods, sugar for example, provide only one nutrient. On the other hand, a small orange contains as many calories as a tablespoonful of sugar but, in addition, contains vitamins and minerals. In term of its contribution to the growth needs of children, an orange is more economical than a tablespoonful of sugar. Some foods owe their right to priority at the table to the fact that they are particularly rich sources of some nutrient and, unless they are included in the diet, the amount of that particular nutrient is likely to be inadequate. Such is the role of citrus fruits and tomatoes as invaluable sources of vitamin C. Milk is outstanding in its contributions to the diet and holds its place in a child's dietary because of its diversity of constituents as well as richness in one particular element. Milk contributes protein of high quality, calcium, phosphorus, some iron, vitamin A, thiamine and riboflavin. Its calcium value is of particular importance. There is approximately as much calcium in a cup of milk as in 5 cups of orange juice, 133 tablespoonfuls of butter or about 3 cups of carrots.

Milk is occasionally fed to infants or children in such excessive amounts that other essential foods, notably iron, may be excluded. Milk as a food for the growing child should be considered in light of the interrelationships of the child's protein, calcium, and iron needs and the amounts of

Food and Nutrition Board, National Academy of Sciences—National Research Council

Recommended Daily Dietary Allowances,[1] Revised 1963

DESIGNED FOR THE MAINTENANCE OF GOOD NUTRITION OF PRACTICALLY ALL HEALTHY PERSONS IN THE U.S.A.

(Allowances are intended for persons normally active in a temperate climate)

	AGE[2] YEARS	WEIGHT KG. (LBS.)	HEIGHT CM. (IN.)	CALORIES	PROTEIN GM.	CALCIUM GM.	IRON MG.	VITAMIN A I.U.	THIAMINE MG.	RIBOFLAVIN MG.	EQUIV.[3] NIACIN MG.	ASCORBIC ACID MG.	VITAMIN D I.U.
Men	18–35	70 (154)	175 (69)	2900	70	0.8	10	5000	1.2	1.7	19	70	
	35–55	70 (154)	175 (69)	2600	70	0.8	10	5000	1.0	1.6	17	70	
	55–75	70 (154)	175 (69)	2200	70	0.8	10	5000	0.9	1.3	15	70	
Women	18–35	58 (128)	163 (64)	2100	58	0.8	15	5000	0.8	1.3	14	70	
	35–55	58 (128)	163 (64)	1900	58	0.8	15	5000	0.8	1.2	13	70	
	55–75	58 (128)	163 (64)	1600	58	0.8	10	5000	0.8	1.2	13	70	
	Pregnant (2nd and 3rd trimester)			+ 200	+20	+0.5	+ 5	+1000	+0.2	+0.3	+ 3	+30	400
	Lactating			+1000	+40	+0.5	+ 5	+3000	+0.4	+0.6	+ 7	+30	400
Infants[4]	0–1	8 (18)		kg. × 115 ±15	kg. × 2.5 ±0.5	0.7	kg. × 1.0	1500	0.4	0.6	6	30	400
Children	1–3	13 (27)	87 (34)	1300	32	0.8	8	2000	0.5	0.8	9	40	400
	3–6	18 (40)	107 (42)	1600	40	0.8	10	2500	0.6	1.0	11	50	400
	6–9	24 (53)	124 (49)	2100	52	0.8	12	3500	0.8	1.3	14	60	400
Boys	9–12	33 (72)	140 (55)	2400	60	1.1	15	4500	1.0	1.4	16	70	400
	12–15	45 (98)	156 (61)	3000	75	1.4	15	5000	1.2	1.8	20	80	400
	15–18	61 (134)	172 (68)	3400	85	1.4	15	5000	1.4	2.0	22	80	400
Girls	9–12	33 (72)	140 (55)	2200	55	1.1	15	4500	0.9	1.3	15	80	400
	12–15	47 (103)	158 (62)	2500	62	1.3	15	5000	1.0	1.5	17	80	400
	15–18	53 (117)	163 (64)	2300	58	1.3	15	5000	0.9	1.3	15	70	400

[1] The allowance levels are intended to cover individual variations among most normal persons as they live in the United States under usual environmental stresses. The recommended allowances can be attained with a variety of common foods, providing other nutrients for which human requirements have been less well defined.

[2] Entries on lines for age range 18–35 years represent the 25-year age. All other entries represent allowances for the midpoint of the specified age periods, i.e., line for children 1–3 is for age 2 years (24 months); 3–6 is for age 4½ years (54 months), etc.

[3] Niacin equivalents include dietary sources of the preformed vitamin and the precursor, tryptophan. 60 mg. tryptophan represents 1 mg. niacin.

[4] The calorie and protein allowances per kg. for infants are considered to decrease progressively from birth. Allowances for calcium, thiamine, riboflavin and niacin increase proportionately with calories to the maximum values shown.

these nutrients in milk (Smith, 1960).

Because of the particular nutritional value of certain foods, it is possible to formulate a basic or fundamental diet containing foods that are the core of adequate nutrition whether the individual be a preschool child, a child going to school, an adolescent or an adult. Differences at these various ages will be differences in amount and perhaps in methods of preparation.

Each area of the world needs to plan its own basic diet in accordance with the prevailing conditions, which include the food resources, the economy and the meanings of various foods to the people.

The following foods provide a basic daily diet for growing children:

- Milk
- Egg
- Meat, fowl, fish or cheese
- Green or yellow vegetable (cooked)
- Raw green or yellow vegetable
- Fruit, including a citrus fruit or tomato
- Whole grain or enriched cereal or bread
- Butter or margarine fortified with vitamin A
- Some source of vitamin D
- Iodized salt for seasoning in endemic goiter regions.

The value of milk has already been explained. Eggs are important because they furnish proteins of excellent quality, iron, riboflavin, thiamine, vitamin A. Meat, fowl, fish and cheese furnish additional high quality protein. Milk, eggs and meat or its substitutes will assure older children and adolescents the amount of protein they need, which exceeds that of their parents. Meat has the added advantage of good flavor. It adds zest to a meal. Of all meats, the glandular organs have the highest nutritional value. Thus, liver and kidney are highly recommended for children. Serving one of these weekly is an excellent practice. The green and yellow vegetables furnish minerals, with special emphasis on iron, vitamins and roughage which aids in intestinal elimination. The whole grain or enriched cereals give additional protein and calories, are good sources of minerals and excellent sources of thiamine. Whole grain cereals are better than refined or milled cereals because much of the mineral and vitamin value of the grain is lost in the milling process. Enriched white bread and flour has thiamine, riboflavin, niacin, and iron added to it in sufficient quantity to make up for the loss of those elements in the milling process. Enriched wheat or corn bread may be substituted in part for the whole grain breads; however, there may be additional unknown nutritional factors in whole grains that are necessary for human nutrition.

The citrus fruit or tomato is included to insure sufficient vitamin C. Citrus fruits include oranges, grapefruit and lemons. If tomato juice is used, at least twice as much is needed to give a vitamin C value equivalent to orange juice.

After these foods have been provided, others which are added will depend upon the family pocketbook, background and habits.

Nature evidently expected man to obtain his vitamin D from the action of sunshine on the skin, for there are relatively few foods that contain vitamin D. In some sections of the country it is possible to obtain enough ultraviolet light from the sun, but in many parts of the country during the winter months the amount of available ultraviolet light is inadequate, the low altitude of the sun being a factor in the limitation. The smoke and dust of city communities reduce it even more. Clothing further prevents the rays which are available from reaching the body. It is, therefore, necessary to

supply the child and adolescent with vitamin D through cod liver oil, one of the many concentrates, vitamin D milk, or a sun lamp. The pediatrician or family physician will determine how much vitamin D the individual child will need and in what form it shall be given.

Distribution of Food. Not only the kind and amount of daily food but also its distribution throughout the day has a bearing on the well-being of an individual. Hutchinson (1952), in reviewing the literature on meal habits and their effects on performance, concluded that small meals at short intervals have an advantage for the individual over large meals at long intervals. Such a regimen tends to maximize efficiency by eliminating the drowsiness and disinclination for mental and physical work following a large meal, and the irritability, restlessness, diminished concentration and feelings of weakness and emptiness attending long periods between meals. Most of the studies reported used adult subjects, but one could assume that a regimen of fairly even distribution of food at reasonable intervals would benefit school-age children as well.

Research on protein metabolism indicates that all amino acids need to be taken at approximately the same time for them to be available for the synthesis of protein. Thus, assurance that all the amino acids are supplied in a meal, either through the use of good quality proteins such as animal proteins or adequate supplementation of proteins of less adequate quality, such as those found in some of the cereals, is important.

Studies indicate that breakfast is a very important meal, nutritionally speaking. In one study, young adults had decreased maximum output of work and increased muscular tremor during a morning after no breakfast, or only coffee (Daum, 1950). In another study, blood-sugar levels dropped below fasting levels and some of the subjects reported hunger, weakness, headache and lassitude following no breakfast except coffee (Orent-Keiles and Hallman, 1949). A breakfast containing a protein food, such as milk or eggs, was followed by a slower drop in the blood-sugar level. A sense of well-being was consistently reported after breakfasts that provided large quantities of protein-rich food. The breakfast meal influenced blood-sugar levels even in the afternoon. In another study, the minimum amount of protein appeared to be 15 grams, which was supplied by an egg and a glass of milk as the protein foods or ⅔ c. cereal, 2 T. peanut butter and 2 slices of bread as the chief protein sources (Addison, 1953). In yet another study, the same amount of protein during the day was used more efficiently when some was eaten at breakfast. Protein at breakfast appeared to be more important than protein at lunch, according to another study (Leverton et al., 1951). Such studies have significance for parents and workers with older children and adolescents, especially since surveys have shown that many children in different parts of the country go to school without an adequate breakfast. This is true of both elementary and high school years. High school boys tend to have better breakfasts than girls (Steel, 1952); college men likewise have better breakfasts than college women (Blewett, 1950). Omitting breakfast means a loss of nutrients which is unlikely to be made up later during the day. When calories at breakfast decrease, calories from snacks increase and these calories tend to be the "lone wolf" or "empty" kind.

EATING HABITS

A child's eating habits reflect his nutritional needs, the degree of maturity of his body, the food habits

and attitudes of his parents, his personal satisfactions and dissatisfactions and the impact of the economic and social world upon him. The acquisition of good eating habits is to be considered one phase of growing up. Good food habits can be said to include: (1) a good appetite to insure eating enough food, (2) the experience of eating and enjoying the foods which furnish a well balanced diet, and (3) an interest in and willingness to eat a widening variety of foods so that the child is guaranteed an adequate diet, is adding to his store of knowledge and is establishing a flexibility toward food. Flexibility, here as elsewhere, is a mark of maturity.

Hunger and Appetite. Hunger and appetite are distinct physiological manifestations, but they operate together as determinants of the food intake of an individual. Physiologists tend to refer to the somewhat broader topic, the regulation of food intake, which is objective in its meaning and refers to a measurable variable, feeding. It involves centers in the hypothalamus, reflexes from the digestive tract, reflexes of feeding activities and composition of body fluids.

Young (1957) describes food intake as being regulated by at least four factors: (1) palatability and aftereffects of eating specific foods; (2) feeding habits and attitudes based upon dietary experience; (3) neural organizations that facilitate or inhibit ingestion of foods; (4) chemical constitution as determined by genes and dietary history.

Appetite is the foundation on which food habits are built, and hunger is closely allied with appetite. Hunger is that urge to eat which impels one to seek food and to eat until that urge is inhibited or satisfied. Appetite is the factor that determines the acceptance of specific foods. The mechanism of the hunger drive and behavior associated with it are still poorly understood. However, from experimentation with animals and man it is believed that the central origin of hunger lies in a subcortical center of the brain, the hypothalamus. From this area, apparently, come the initiation and direction of the motor responses that constitute this drive. This hypothalamic mechanism is called "appestat" by Jolliffe (1952) since it is thought to resemble the action of a thermostat. The manner in which it regulates food intake is not yet known.

The sensation of hunger is characterized by successive phases of restlessness, sensations of tightness in the back of the mouth, feelings of emptiness and acute unpleasant, aching, gnawing sensations, or "hunger pangs." These sensations are associated with rhythmic contractions of the stomach, which appear in the newborn at birth and recur after feedings as the stomach empties. These contractions are augmented by bodily activity. They are diminished by eating, by the sight of food which produces a flow of gastric juice, by fatigue, by strong emotions, by pressure on the abdomen, by smoking and by fever. Normally, everyday hunger sensations are stopped by eating. This is a natural sequence of events. Since fatigue, emotional disturbances and fever interfere with the natural "ebb and flow" of food intake, prevention of these factors is advisable whenever possible.

The hunger drive begins to function at birth. Almost immediately it becomes integrated, through other hypothalamic mechanisms, with emotional reactions. Recognizing this, it is important to see that babies are fed under conditions that provide affection and security. Thus, the hunger of the stomach is relieved and the emotions are given basic gratification at the same time.

In the development of hunger and feeding behavior, both of which are basic to physical survival, there grow up many conditioned feelings and emotions (closely associated responses which develop through being repeated over and over in immediate connection with the feeding situation) which affect the vigor of the hunger drive, the willingness to try new foods, the rejection of certain once-accepted foods, and many things related to food and hunger which do not appear on the surface. As the child grows and widens his social contacts, the emotional satisfactions from food or frustrations in the feeding area become extended to objects and relationships which are not always apparent to the observer. Food, generally and specifically, acquires different meanings to different people and to the same person at different times. Thus, human relationships play a profound role in maintaining a sound hunger drive and thereby influence food habits.

Appetite is said by Keeton (1953) to result from modification of the behavior of the hypothalamic hunger drive by cerebral activity. It is usually a pleasant sensation based on previous experience of tastes, smell and other pleasant associations with the food. It motivates one to eat the food in order to experience the sensation of well-being that will follow its ingestion or to enjoy the pleasant sensory experience of eating it.

Thus, the practice of self-regulation in which the time for eating is set not by the clock but by the natural rhythm of the child—which at the same time provides him with emotional gratifications as a part of eating—is in accordance with this concept of the hunger-appetite mechanism. A young infant soon settles into a rhythmic pattern of eating with a gradual reduction in the number of feedings per day. Gradual adjustment to the feeding habits of his cultural group should develop so that he progressively fits his meals into the pattern of the family. In most children this will have taken place naturally so that long before the child enters school his pattern and that of the family have become synchronized. A physically and psychologically healthy regimen in which the maturing child fits smoothly into the life of the home, school and community in accordance with his degree of maturity will aid in maintaining this appetite mechanism in a healthy state.

Hunger and appetite can be a gauge of the amount of food to eat. They are adequate in determining the amount of food necessary for the health and growth of a child when they are normal and not diminished or perverted by physiological or psychological factors. When hunger and appetite fail to operate at an optimal level, the body lacks sufficient materials for efficient performance and growth. At the other extreme, occasionally, when the satisfaction from eating is sutstituted for another satisfaction lacking in the child's life, the desire for food may go beyond physiological needs. Occasionally, as we have seen, a child overeats in compensation for lack of affection, security, status in his work, etc. This condition, however, should not be confused with the ravenous appetite of the growing, active pubescent child.

Since children generally can decide for themselves the amount of food they need, they may have a share in determining how much food will be served to them. Often adults overestimate a child's capacity for food. It is well to remember that appetites vary from meal to meal and from day to day, and it is a wise parent who recognizes and accepts these variations.

In a study of 140 girls, 12, 13 and 14 years of age, it was found that family criticism for not eating the right foods, for eating too much, for eating too

often, and for eating too slowly were significantly related to a negative attitude toward the selection and eating of an adequate diet (Hinton et al., 1962).

Appetite as Guide in Food Selection. The wisdom of the body as a guide in food selection to meet man's specific nutritional needs cannot be relied upon. Such a mechanism as appetite can be obscured by the multiplicity of economic, social and cultural forces that influence food selection. The process of self-selection, as indicated by animal experimentations (Scott, 1950) and the experiment of Davis (1928) with newly weaned infants, seems to be that of learning and thus, is subject to conditions conducive to learning. Davis (1959) demonstrated that a group of infants, with no former experience with food, other than milk, under controlled conditions in an institution, and given a wide variety of simple, *natural* foods, could select their own food in such a way that satisfactory nutrition was maintained. This experiment is no justification for laissez-faire policy by which an adult assumes no responsibility in setting the stage for the child's choices. Rather, it demonstrates that under *certain conditions*, including a full coverage of nutritional requirements in the foods available, freedom from emotional stress and absence of distractions, the removal of pressure and the granting of freedom in the choice of appropriate foods will help children to develop satisfactory food habits. The controlled conditions of the experiment cannot be duplicated in homes, but it is possible to see that children are served meals that consist of foods rich in necessary nutrients and that mealtime is free from emotional stress and lacking in distractions.

Important Factors in Acquisition of Eating Habits. In order to understand the food patterns and habits of a child, we must view them as an integral part of the whole child as he relates himself to his environment. This means consideration of his growth, his past history, the customs, habits and expectations of his family, his personal relationships in the home, school and community and the social pattern of his world. As mentioned before, food has many meanings to a child. The particular meanings for a given child, when understood, help to reveal the way in which he acquires his food habits and offer a basis for correction, if and when correction is necessary.

Every child at birth has the basis for establishing good eating habits, namely, the hunger drive. The gratification from taking food at the time hunger sensations occur is the beginning of establishing good eating habits. Conversely, frustration in feeding experiences inhibits their development. With this experience as a beginning, the child changes his eating behavior with increasing maturation and experience.

From the early weeks of life *taste discrimination* is present and provides a basis for the development of selective appetite or the liking and disliking of foods. In the infant, taste buds are distributed abundantly in the mouth, on the tongue, cheeks and in the throat. With increase in age, until probably around 12 years of age, they decrease in number and distribution. Thus, with the same food, the taste sensations of young children may differ from those of older children and adults. Also, there are individual differences in the intensity of taste sensation, and the sensitivity varies in the same individual from time to time (Williams, 1956). Renner (1944) says that the keen-sensed individuals are generally the quickest eaters. These differences with age and between individuals of the same age may be responsible in part for individual

children's differences in accepting foods.

Since sight, smell and the feeling of the texture of food in the mouth add to the sense of taste and affect children's reactions to foods, the quality of the food and the combinations of foods will add to or detract from the pleasure of the meal. Variety in color and consistency and pleasing combination of flavors will enhance the attractiveness of meals. The preparation of the foods is also important.

The acquisition of *motor skills* is reflected in the child's manipulation of his food. By the time a child enters school, he has achieved much in this area. (See Chapter 8.) It is important that the form in which the food is served be compatible with his skill in handling it.

The *social development* of the child also contributes to his food habits. In the school years, as he is breaking away from dependence upon his family and is leaning toward his friends, he drops some of the table manners which he has learned from his family. This is characteristically a period of messy table behavior. Parents need not become distressed, for this is a passing phase and a part of growing up. If parental pressure is applied too rigorously at this time, it may result only in influencing unfavorably the child's attitude toward food.

During adolescence the heavy schedules of boys and girls often produce fatigue, with its depressing effect upon the appetite. Irregular or hurried meals occur because "there just is not time to eat." In addition to this, the pressure of the social group is strong. The drug-store habit with its acceptance or rejection of certain foods may interfere temporarily with the practice of good eating habits established earlier. A wise parent who understands this can, with ingenuity, help to direct "what is being done" by the peer group by offering well balanced foods at home plus a good personal example. With the help of health programs at school, and the urgency of "figure consciousness" in both boys and girls, there is good support for the acceptance of sound eating habits.

Emotions play a role in food habits. We have mentioned the child who overeats to compensate for something that is missing in his life. Children who are happy and secure are more likely to eat well than children who are disturbed by worry, anxiety or discontent. Occasionally, children of high school age have difficulty eating breakfast because of emotional tension. Rabinovitch (1952) points out that food may serve as a symbol for many things to a child, including security and comfort.

A *healthy child,* all other factors being equal, will eat better than will the child who is not well. However, when he has a cold, a sore throat or a greater incapacitating illness, he may not be interested in food. Such an illness may be the beginning of a chronically poor appetite if the adults fail to appreciate the child's temporary disinterest in food and either urge him to eat or express undue concern about him. The lack of desire to eat during illness should be respected since it has a physiological basis. Children with chronic illnesses and foci of infection, such as diseased tonsils and carious teeth, cannot be expected to have keen appetites.

A child's *physical habits* will strengthen or impair his appetite and thus his interest in and attitude toward food. Regularity and the spacing of meals, satisfactory elimination, plenty of exercise, fresh air and sunshine, and enough sleep and rest to permit recuperation from the activities and stresses of the day are important. There is much truth in the saying "too tired to eat." The tired child, whether he is tired from vigorous exercise or

from one of the other many causes of fatigue, is not ready for his meal.

A *balanced diet* is also important. The consumption of fats and sweets tends to be relatively high in many diets in the United States. Macy (1942) observed that children whose diets were poor had an abnormal craving for sweets. As the diets became well balanced to meet bodily needs, the healthy child voluntarily reduced his sugar consumption.

Source of Eating Habits. In his early years the child spends most of his time at home and it is at home that he acquires his eating habits. Parents, in planning for their children, can prepare for them by taking stock of their own food patterns and setting the family eating habits in readiness for the children. This is important for, even before the child has moved from infancy into early childhood, he begins to acquire the tastes of his family for the particular foods and food combinations they prefer. He becomes acquainted with sweet foods or with salty foods. If the family likes white bread only, he learns to eat white bread only, both because it is served and because he learns to eat by imitating others. If the family has wide food interests, he will have ample opportunity to learn about many foods. If, however, the family list of foods is limited by food prejudices, he will be deprived of extending his knowledge of foods beyond a narrow range. It is through their early and repeated experiences that children develop interest in a variety of foods and an attitude of adventurousness in trying new kinds. Thus, children are conditioned early in their food habits, some practicing wise food selection, some not. These childhood experiences with food are reflected later in the selection of food in the school years and in adolescence. Studies of food habits of school-age children and adolescents indicate that many of them have inadequacies in their diets according to the present knowledge of nutritional needs (Epright, 1952). Younger children tend to have better diets than older children. Boys tend to have better diets than girls. Adolescent girls tend to fare worst of all (Leamy, 1953). With the adolescent girl approaching her reproductive period and with the recognition of the importance of nutritional preparation for childbearing, the food habits in this period have pertinence for the future health of the young woman and her child. One study has indicated also that the food habits of the adolescent tend to persist beyond the teens (Fry, 1959). This points to the need for making it possible for children and adolescents to develop good attitudes toward food and for better teaching in nutrition plus opportunities for practicing that knowledge.

The atmosphere at mealtime varies in families. In some it is a time through which to hurry; in others it is a social experience in which enjoyment of good food is joined with good fellowship. Meals are generally more enjoyable in an atmosphere of leisure and relaxation. Mealtime is not a time for scolding, nagging or discussing the day's difficulties and the family's problems.

The parents' attitudes toward their children's eating are extremely important. According to Baldwin's study (1945), good appetite was found in homes in which strict disciplinary methods were combined with approval of the child. The type of strictness found in these homes seemed to be a strictness about a few essentials of behavior but not a strictness that completely determined the child's activities. Thus, setting limits on behavior seemed to be psychologically healthful. Excessive restraint, which appeared to stem from forcing adult standards upon the child, seemed to deprive the child of free and spon-

taneous behavior. A wide acceptance of foods, he reported, was generally associated with abundance of affection and attention. More will be said about the effects of too rigorous discipline and the need of a balance between discipline and affection in Chapter 5.

In a study of eating habits of adolescents from different cultural backgrounds, it was found that good eating habits are not the result of one single type of family pattern, strict, lenient or intermediary, but depend upon "the parent's adaptability to the needs of a changing younger generation and to a cultural pattern that has no code as yet, but is itself in transition" (Mead, 1963). Thus, parents must grow with their children and adapt their guidance according to the stage of development of the child plus the demands of society.

Unwittingly, many parents in this country do not always assist children to learn to enjoy desirable foods. Mead (1963) discusses the dilemma of the child in what she calls the average home in the United States in which the child learns, through his parents' attitudes and behavior, that the "right" foods tend to be undelicious and the "wrong" foods tend to be delightful. They learn this through rewards and punishments meted out at mealtimes. The oft heard remarks "Drink your milk and then you can have your dessert" (not all desserts are "wrong" foods) and "If you don't eat your vegetables you can't have that candy after dinner" bear evidence to this point. In such instances dessert becomes a bribe and the withdrawal of candy becomes a punishment. A child is virtuous when eating the "right" foods, but he is not expected to enjoy them. Later, when children from such homes have a chance to choose foods for themselves, they have to decide between doing right or enjoying themselves. Since eating the "right" foods has become associated with parental domination, the adolescent may eat undesirable foods as a bold gesture to announce that he has grown up. Children with such eating experiences miss the opportunity of laying a foundation of pleasurable experiences with food as the basis for later self-selection.

The quantitative as well as the qualitative aspects of eating habits may be affected by the home. It is being suggested that obesity for some individuals may stem from a long habit of overeating reaching down even into infancy. Thus the current practices in infant feeding are being examined in terms of their possible contribution to later obesity (Gordon, 1957).

The foods eaten and attitudes toward food vary from one culture to another. In order to understand children's eating habits, it is necessary, therefore, to know the cultural background of the family that dictates the values of foods and the uses made of food in daily living, such as, acceptable or unacceptable foods, foods eaten on special occasions, foods associated with religious practices, patterning of meals, eating behavior and the manner in which children learn about food.

Thus, good food habits are learned best in an environment that recognizes and permits changing behavior with advancing maturity, that promotes good mental and physical health, provides pleasant experiences with good food, and furnishes an opportunity for learning to make wise food selection. It is a cooperative venture between child and parents in a specific environment.

OTHER FACTORS RELATED TO NUTRITION

To provide children with the food they need for health and growth is not enough. The food must be broken

down by digestion into substances that the body can absorb; those substances, such as glucose, fatty acids, amino acids, minerals and vitamins, must pass through the walls of the digestive tract into the blood stream, be carried to the various parts of the body, transmitted to the body cells where they are assimilated, and converted into body tissues. The efficiency with which the body performs these processes is not perfect and that efficiency varies from individual to individual and from time to time within the individual.

Everyone knows of children who, in spite of large appetites, remain thin, while other children gain weight on a much smaller intake. It is, therefore, valuable to know some of the factors that influence the assimilation and utilization of food. The possibility of a genetic factor influencing metabolic processes has been stated earlier. The need for a balance of nutrients has also been mentioned.

Further, the conditions under which the food is eaten influence the use the body can make of it. A leisurely, pleasant mealtime permits proper mastication, which prepares the food for digestion by breaking it up and mixing it with saliva and also makes the normal flow of the digestive juices possible. In contrast, a hurried meal or one fraught with emotional stress is a poor prelude to proper digestion. Finally, other physical habits—elimination, rest and activity—contribute to the processes of digestion and assimilation

Elimination. The elimination of waste products is necessary for the well-being of the whole body. These waste products consist of substances that result from metabolic processes and substances in the digestive tract that have not been absorbed. The organs of elimination are the lungs, the skin, the kidneys and the intestines. The lungs excrete carbon dioxide and water vapor; the skin, water and some salts; the kidneys, water, products of protein metabolism and salts; and the intestines, undigested materials, bacteria of the digestive tract, wastes of the digestive process, some salts that have been used by the body and are ready to be removed, and water.

The *amount of urine* excreted varies among individuals and from day to day in the same individual, depending upon the amount of water consumed and environmental conditions that increase or reduce the loss of water through the skin by perspiration. The *frequency of urination* also varies greatly. Boys tend to urinate more frequently than girls. A child tends to urinate more often when he drinks more fluids, when it is cold, or when he is excited or under some other strong emotional tension. Because of the variability among children in the need to urinate and the variability from day to day in the same child, children's requests to go to the toilet need to be granted.

In fecal elimination the *amount of feces* depends, to a large extent, upon the diet and the water intake. A diet with adequate roughage from a liberal use of fruits and vegetables increases the amount of feces. Scant feces are the end product of a diet of foods that leave little undigested residue.

The *normal consistency of feces* approximates that of an overripe banana. If the materials in the intestine move too rapidly, there is diminished opportunity for water to be absorbed and the frequent, loose bowel movements of diarrhea result. But if the materials move too slowly, excessive water is absorbed through the walls of the intestine and the hard bowel movements of constipation are the consequence. The speed of the peristaltic movements of the digestive tract is influenced by diet and by emotion. Too soft stools, therefore, may be the

result of too much roughage or food that has been too irritating to the lining of the digestive tract or may be caused by emotional distrubances. On the other hand, too hard stools may be due to inadequate water, too little bulk or nervous tension

Fecal elimination generally occurs once a day at a regular time. There is no hard and fast rule, however. Some children have more frequent bowel movements and some have a rhythm of every other day. Regularity in a child's pattern of elimination is more important than conformity of his pattern to that of others. Having a regular time daily for the bowel movement, preferably after a meal since peristalsis is stimulated by eating, and allowing ample time so that the child will not be hurried will aid in establishing and maintaining good elimination. An excellent time for bowel elimination for the schoolchild is in the morning, either on arising or after breakfast. At this time the child is more relaxed after a good night's sleep. There is also less chance of interference in a routine thus timed than during school hours. Children should be encouraged to go to the toilet when the urge for defecation rises. Ignoring this urge may lead to constipation.

The final control of elimination, and particularly control of the urethral sphincter, is a complex process closely related to and affected by the character of the child and his behavior in a standard unpleasant situation (Válková et al., 1962).

Rest and Activity. Both activity and rest are important because of their relation to nutrition and growth. Muscular activity is important in that it improves circulation and respiration, stimulates appetite, aids digestion, improves muscle tone, thereby fostering good posture and normal elimination, lessens tensions, and increases endurance, strength and accuracy. The amount and kind of activity satisfactory for a child depends upon his bodily strengths and weaknesses, his general physical health, and his stage of development. Espenschade (1956) states that it is generally agreed that the elementary school child should have 4 to 5 hours of physical activity daily. In addition to large muscle activities, there are the finer motor activities and muscle tensions accompanying mental work.

Activity cannot be continued indefinitely because muscles become tired, so periods of inactivity are necessary to restore them. These periods of rest need to occur frequently in childhood. Rest may not necessarily mean complete inactivity; it may be a change from one type of activity to another so that one part of the body rests while another works, or the tempo of activity may simply be reduced. For example, a period of folk dancing may be followed by a period of reading or, following a vigorous dance, rhythms inducing relaxation may be introduced. The most satisfactory and prompt recuperation, however, takes place when the muscles are both inactive and relaxed and when there is both mental and physical repose. In the early school years, children can learn to recognize the feel of muscles when they are relaxed and also how to put them in such a state.

The balance of rest and activity differs for different children. Some require more rest than others as, for example, the child who has been ill. His muscles have lost some of their tone and are, therefore, more easily fatigued. Such a child needs more frequent and longer rest periods until he has attained his normal vigor once more. Children who are malnourished need more rest than do well-nourished children. Some children require more than average amounts of mental and emotional rest and greater physical activity. For children who have been

sitting for hours in a classroom, outdoor play is more restful than sitting in a corner reading a book. To plan a child's regimen so as to allow for a balance of activity and rest, it is necessary to know the child, his health history and growth, and his home and school environments and the demands they place upon him.

Sleep. Sleep is the most complete and satisfactory of all forms of rest. It rests not only the voluntary muscles and the eyes but there is also a depression of other tissue and organ activities. The circulation and respiration are slowed. That less energy is expended is indicated by a lower metabolic rate. More energy, therefore, is available for growth.

Sleep is one phase of the sleep-wakefulness cycle which, as Kleitman (1957) says, can be likened to the crest and the trough of a wave. This cycle is an inborn pattern of alternation of rest and activity. In the newborn, wakefulness is subcortically controlled. Fatigue or cyclical decrease of activity of this subcortical system leads to sleep. This cycle is adjusted to the infant's needs for food and water. It is dominated by the sleep phase. As the cerebral cortex matures and experiences accumulate, a new rhythm is established by consolidating sleep and wakefulness phases, lengthening wakefulness phases and synchronizing this cycle with the periodicity of day and night, with the changes in light and temperature and with the accompanying "social timetable" of the routine of living that provides stimulation of activities, noises and personal contacts (Kleitman, 1960). Important also is the fact that a 24-hour body temperature curve is gradually established and usually attains its adult characteristics during the first half of the second year. Physiological readiness for sleep is associated with a rather sharp drop in body temperature at a particular time. The process of establishing this rhythm, which is easy for some and difficult for others, will depend upon circumstances and the personality of the child. The general requirement, however, is the maintenance of a regularity in the timing of the day's activities, including eating, bathing, playing, etc., initiated by the infant's physiological clock and later tempered by reasonable adaptation of the child to his family situation and the society in which he lives.

By the time a child enters school the kind of rhythm that has been set will depend upon internal regulatory mechanisms and his experiences. The degree to which advantage has been taken of the child's daily physiological and psychological readiness for sleep will be a factor. The child from 5 to 10 years is still in the process of learning to sleep.

He is still having trouble going to sleep and makes certain demands upon his parents for help. Bedtime for the younger school-age child is still a time of closeness between parent and child, a time when the child is especially responsive and confidential. As the child grows in independence, he may resist going to bed, not so much in resistance to sleep itself but rather to a parent-imposed task. By 14 years of age many children assume responsibility for bedtime, and some are aware of the need for sleep.

The quality and quantity of sleep of a child during the growing years varies from child to child and from time to time for each child. It is natural for children to awaken from sleep rested, but for some children sleep is not a very restful, recuperative experience. Children may be unrefreshed after a night's sleep if it is too quiet, too restless or too short. Ordinarily children do not sleep like a "log." There is some bodily movement which varies in amount from hour to hour, from night to night and

from child to child. Undoubtedly, some of the movement is the result of the discomfort that comes from lying too long in one position. Movement during the night, therefore, prevents prolonged pressure on specific muscles and thus contributes to a refreshing sleep. However, too much movement may be tiring.

The amount of sleep a child needs decreases with age. The young baby sleeps most of the time. As he grows, his waking hours increase so that during the later months of infancy and the preschool years he has a long sleep at night and one nap during the day. By the time he enters school his nap has probably been dropped. It may have dropped out spontaneously, or it may have been forced out by attendance at school. Some schools, recognizing the value of a daytime rest, provide for it in their schedules.

Toward the end of the preschool years, according to Kleitman (1960), a child sleeps about 11 hours of the 24. No arbitrary rule can be laid down for older children, since their sleeping needs vary widely. The child's physical and affective makeup and rate of growth, the pace of the daily schedule of activities, satisfactions and concerns with life may contribute to the differences in sleep needs. A child who goes to sleep promptly and awakens by himself, who is energetic and can take the demands of the day in his stride is undoubtedly having enough sleep. On the other hand, the child who has to be called each morning, who takes a long time to go to sleep and who is played out early in the day needs to have his 24-hour schedule scrutinized. He may need more sleep.

Rapidly growing children may well need more sleep than when they are growing slowly. Thus adolescents need plenty of sleep. At times these children are accused of being lazy because they sleep late in the morning, while, in reality, this may be an expression of need. A reasonable bed hour during school years is desirable for the adolescent since school schedules prevent his sleeping longer in the morning. Gesell et al. (1956) report from observations of 10 to 16 year olds that the bed hour is about one-half hour later each year, reaching 11 o'clock for the 16 year olds.

The sleep habits of the school-age child are built upon the accumulated experiences of earlier years. With this perspective in mind the physical and psychological factors that contribute to establishing and maintaining good sleep habits can be examined. Being naturally tired, but not overstimulated, after an active, happy day is a sound basis for good sleep. It is said that a child takes his day to bed with him, his satisfactions and his dissatisfactions with himself in relation to his parents, peers and school, his anxieties, worries, fears and troubles, his achievements, his joys. All these will determine in part the kind of sleep he will have. In addition, certain conditions that facilitate sleep include a consistent but not rigid bed hour and routines, a moderate meal, a quiet relaxing time before bed, a place to sleep free from noise and other external stimuli (especially the unfamiliar) and comfort, such as a comfortable bed and warm but light bed clothing. Many of these conditions are more easily achieved if the child can have a bed of his own and, if possible, a room of his own.

The child's attitude toward going to bed may be one of pleasant and casual acceptance or one of resistance. His attitude may reflect family attitudes. Families that have positive feelings toward sleep tend to generate such feelings in the children. Attitudes may stem from the kind of relationship and feeling tone that exists between parents and child. Undesirable attitudes may be fostered by parental

overauthority, by too little guidance so that the child is burdened with responsibility for his behavior, by oversolicitude, by much talk about sleeplessness, by suggested fear of the dark or punishment at bedtime. Children will resist going to bed when they feel that by so doing they are being deprived of something. A child with a full and satisfying life will not feel cheated when sent to bed while others of the family continue with their evening activities. During the school years and in adolescence the continuation of good sleep habits is essential, and conditions favorable to a regular and reasonable bed hour need to be maintained.

Fatigue. General tiredness, called fatigue, that is relieved by food and rest is a natural part of the activity-rest cycle of an individual. If fatigue accumulates gradually from day to day it becomes chronic. Such fatigue results from disregard of normal fatigue, from illness, from emotional disturbances or various combinations of these.

Factors contributing to fatigue include inherited constitution, too much stimulation, undue competition, insecurity and compulsion, strained body positions while working (which might be produced in school by inappropriate lighting and working facilities), poor balance of types of activities, need for food and an overscheduled life with no time for relaxation and recovery.

In chronic fatigue the body's capacity for work decreases, the tissues become damaged or less fit, resistance is lowered and recovery from fatigue is slow. In childhood, fatigue develops more quickly than later because of the immaturity of the tissues and the energy being expended for growth.

Different children react in different ways to fatigue, depending upon which system of the body becomes tired most easily. If his digestion is weak, the child reacts to excessive fatigue by loss of appetite, vomiting or diarrhea. In the case of a child with a sensitive nervous system, restlessness, overactivity, irritability, sleeplessness, headaches and such conditions will be the first signs of fatigue. Changes in the circulatory system, indicated by pallor or a dusky color, may appear. Body temperature may become unstable.

Almost any acutely tired child is cranky and unreasonable, cries on slight provocation and denies that he is tired. The first results of fatigue are often increased activity and excitability. Later, the child usually becomes listless and inactive. As fatigue progresses, the child may develop dark circles and puffiness under his eyes. He may be unable to control certain muscles, and tremor of the hands or muscle twitches may appear. Speech is sometimes affected, so that the child stammers or stutters. The tired child in school may demonstrate inability to cooperate in group enterprises, his initiative may be low, his attention span short. He may develop a defense mechanism of indifference to his environment.

Children who are fatigued need a carefully balanced program of rest and play in which the three R's, refreshment from sleep, relaxation and recreation, are provided in generous amounts. As capacity for activity increases, longer activity periods can be tolerated. The chronically tired child needs a thorough physical examination, increased rest, a good diet with emphasis on the "protective" foods, fewer emotionally stimulating experiences, such as radio, TV and movie programs, and a satisfactory "emotional climate" in the home.

EXPERIENCES TO VITALIZE CLASSWORK

1. Plan a day's diet for a kindergarten child; for a high school boy.
2. Visit a school cafeteria.

a. Observe the room and equipment, the kind and quality of food served, the procedure during the noon hour, the selection of foods made by the children, the general emotional atmosphere.
b. Observe some individual child to see what actually happens to him during his lunch hour.
c. Evaluate what you see from the point of view of nutrition and education.
d. Plan some ways of educating children in the selection of good lunches.

3. How would you explain to an adolescent girl the value of good physical habits of eating, sleeping, activity and elimination?

4. Evaluate your own food habits and trace their origins as far as you are able.

5. Paul is 6 years old and in the first grade. His mother reports that he takes a long time to go to sleep, is often restless during the night and has to be wakened in the morning. She realizes that something is wrong and asks for help. How would you proceed?

6. Visit a school classroom or recreational group and look for possible signs of fatigue. Enumerate them. Can you recognize the probable causes? Plan a regimen for these fatigued children.

7. A kindergarten child has to go to the toilet about four times during the morning. This has happened for several days. What possible contributing factors should the teacher investigate?

8. A 9 year old boy is a poor eater. He is not hungry at breakfast and under pressure from his mother eats a little Cream of Wheat cereal with sugar and cream and drinks some orange juice. At noon he has an hour for lunch. He hurries home clamoring for food, drinks his milk and eats some bread promptly, takes a few bites of egg and vegetable and then wants to go out to play with the boy next door. In the afternoon he raids the ice box. He is not hungry at dinnertime, but with pressure from both parents eats a little of everything. By 8:30, his bed hour, he is hungry and has a large glass of milk with Ovaltine. What suggestions would you make to the mother?

SELECTED READINGS

Bogert, L. J.: Nutrition and Physical Fitness. Philadelphia, W. B. Saunders Company, 1960.

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Company, 1963. Chapters Six and Seven, Physical and Psychologic Needs: Nutrition; Eating Habits; Elimination.

De Castro, J.: The Geography of Hunger. Boston, Little Brown and Co., 1956. The problem of "hidden" hunger around the world, with the contributing social and economic factors.

Guyton, A. C.: Function of the Human Body. Philadelphia, W. B. Saunders Company, 1964.

Nasset, E. S.: Food and You. New York, Barnes & Noble, Inc., 1958. The basic facts about nutrition.

Stuart, H. C., and Prugh, D. G. (ed.): The Healthy Child. Cambridge, Harvard University Press, 1960. Chapter I, The Principles of Growth and Development; Chapter IV, Physical Growth and Development.

Watson, E. H., and Lowry, G. H.: Growth and Development of Children. 4th ed. Chicago, Year Book Publishers, 1962.

INFLUENCE OF THE HOME AND FAMILY

We shall assume that, unless otherwise stated, the family discussed here is the nuclear family made up of a mother, a father, and child or children living together. We shall occasionally refer to other relatives who make up the "extended" family, as defined by Berelson and Steiner (1964).

Margaret Mead (1963), the well known sociologist, points out that the "American family" is changing—that we are moving toward a new family form in which grandparents can contribute something unique to the development and understanding of children. She points out that today's grandparents have lived through the most rapid changes the world has ever known. Our contemporary grandparental generation is the greatest source of information about a problem facing everyone, namely, how to stand change. So the grandparent, Mead says, is now needed in quite new ways, not only in individual family life but also in all of those organizations that support and extend the role of the family in the education of children—child study groups, PTA's, and so forth.

Mead continues by stating that a second condition that demands a new form of family is the need for greater support for (1) young couples who have married early and are attempting to bring up children under extremely difficult circumstances, and (2) for

the very large number of one-parent families, in many of which the mother is working full or part time.

A third condition in the changing American family, Mead says, is the extent to which parents can no longer control the moral training of their children. Commenting that the capacity to make a distinction between right and wrong is universal among contemporary peoples and has been claimed to be an essential part of man's humanness, she says that in a changing situation such as characterizes our contemporary American (and world) situation, each set of parents is "hard put to it to give clear moral definitions to their children."

In the 1930's, as in the 1960's, research in child development has confirmed and reconfirmed the importance of the home and family in the development of the child. In discussing changes in the parental role in the United States, Hoffman and Wyatt (1960) say: "In the 1950's the United States has become increasingly a child-centered culture; a closely related development is the popularization of psychology."

Importance of the Parents and Family. Many studies emphasize the role of parents and family as of great importance in the development of the child physically (as we saw in Chapter 4) and psychologically. Berelson and Steiner (1964) say that opinions, attitudes and beliefs are "inherited" (psychologically and sociologically) from one's parents; children learn them early and the learning persists into adulthood. Rosen (1964) says that parents transmit values to their children in several ways: explicitly through instruction and selective reinforcement of selective responses, or implicitly through their own behavior. He adds that the effectiveness with which this transmission takes place differs: in some families the children have values very similar to those of the parents; in other families the value systems of the parents and children differ markedly.

Dubin (1963) says that in the socialization of the child and for the maintenance of social order, the authoritative behavior of parents in the authority-inception period of development is highly functional. Bealer et al. (1964) reviewed a large body of research findings and report that they did not find complete support for the adolescent rebellion image but, in a study of 506 Minnesota rural high school students, did find that more than three-fourths of them reported their parents to be the most important reference point in their lives.

Lipset (1960) found that, nationally, the political attitudes of lower income and upper income teenagers closely followed the voting patterns of their families. Putney (1961) found in a study of 1088 students in thirteen different colleges that most of these young people, particularly girls, conformed to the religious ideologies of their parents. Berelson and Steiner (1964) confirm this in their report that only for a small portion of the population is it true that the political attitudes of growing young people are formed in rebellion against the parents. Girls are substantially more affected by parental attitudes than are boys (Zunich, 1962).

The child's perception of his parent-child relationship is correlated to his adjustment; the well-adjusted child will perceive his parent-child relationship as relatively happy and close to the theoretical ideal, whereas the maladjusted child's perception of his relationship is far from the ideal. There appears to be little agreement between parental conceptions of the parent-child relationship and the child's perception of it (Serot and Teevan, 1961).

Hoffman and Wyatt (1960) say that the emphasis upon the influence of

parents upon children has had two important effects upon the parental role. The importance of the child-rearing function has made the parental function an ego-involving activity—for the mother, at least. Being a "good mother" carries implications beyond the mere physical care of children and implies that it is a mysterious and difficult art. They suggest that many mothers are consciously or unconsciously disappointed in their success as mothers and that there is a tendency to have other children so that there will be other chances to succeed. They also suggest that today's mother is relatively free of the drudgery of many aspects of homemaking and child rearing, and hence can present a picture of the "slim, vigorous, well-groomed woman with four or five children which gives her an advantage over the woman who is not a mother."

There are many studies, too, on the effects of parental and family influence on maladjustment of children. Clark and Sommers (1961,a) found that "the antecedent condition of maladjustive behavior by the child is unsatisfactory relations among the adults in the home." Gregory (1961), in discussing the background factors related to sociopathic personality and behavior disorders, says that there is often a history of parental discord or separation and prolonged placement of the child in an impersonal institution (orphanage) where he has been unable to establish relationships or a sense of belonging.

Gregory also discusses alcoholism and drug addiction, saying that those alcoholics and addicts with a history of neurotic personality characteristics and adjustment frequently have a history of an overcontrolling, demanding and anxiety-ridden parent.

Parents of problem children between the ages of 8 and 12 were found by Schulman et al. (1962) to be significantly more rejecting and hostile toward their children than were parents of normal children. Brooks et al. (1962) found a significant correlation between truancy from school and parental attitudes toward the school and toward attendance by the child. McDonald (1962) contrasted parents of disturbed children with parents of normal children, and found that parents of disturbed children: (a) were more self-rejecting than parents of normal children; (b) more frequently described their children as distrustful, self-effacing, or dependent; (c) were more frequently disidentified with their children; and (d) were more inclined to devaluate the personalities of their spouses and children than were parents of normal children.

Significantly higher anxiety test scores and more adjustment difficulties occur among preschool children from broken homes than among children from homes with both parents (Koch, 1961).

In a study of 3000 college students Landis (1963) found significant differences between the students from happy and those from unhappy homes. Among these differences was a difference in heterosexual relations, young people with happily married parents evaluating their own personalities more favorably and having less difficulty in such relationships; they also reported fewer doubts about their own chances for successful marriage.

Behavior and IQ ratings of forty 6 month old infants were found by Yarrow (1963) to be correlated with assessments of the mother's interaction with her infant in the areas of need gratification and tension reduction, provision of stimulation, and affectional-emotional interchange. Webroff (1963) found that even events prior to conception, or which occur early in prenatal or postnatal development, can have a profound effect on later maturation, behavior and adjustment.

Mother-child Relationship. There is extensive evidence of the im-

portance to the child's psychological development of the close interrelationship between mother and child from birth and even before birth (Yarrow, 1963). Shainess (1963) suggests that the maternal attitude toward her forthcoming child is determined before the child appears and is channeled into a direction predominantly accepting or rejecting. He also theorizes that the maternal attitude is a distillate of the woman's personality, values, philosophies, relationship with husband, security, and motivation for pregnancy. Conditions of pregnancy, delivery and early postpartum period make important contributions to this attitude.

The mother's personality and her attitude toward the child after he is born are of profound importance. She may, for example, be cold and direct, or so lavish with affection that the child remains infantile. She may allow him autonomy, or she may control his every activity. Finally, she acts as a model, and the ways in which she is perceived by the child determine many of the behavioral choices he will make (Kagan and Moss, 1962).

Breast feeding is thought by many writers to contribute to the psychological well-being of both mother and child (Huntingford, 1962). This is a well-being that is not only beneficial to the infant at the time but may perhaps contribute to general security and ultimate personal-social behavior. This benefit, however, appears to depend somewhat upon the attitude of the mother toward breast feeding and toward the child during the process. Heinstein (1963) found that the coldness or warmth of the mother's attitude toward the child was related to the child's adjustment or maladjustment among the subjects studied. Boys nursed a long time by a warm mother were the best adjusted. Girls breast fed by a warm mother were relatively well adjusted. Those breast fed by a cold mother were found to have a large number of behavior problems.

An analysis of the Berkeley Growth Study mothers and children suggests that mother-child correlations vary with the sex and age of the child. Higher correlations were found more often between maternal behavior and son's behavior than between maternal behavior and daughter's behavior. Maternal behavior correlated with both the present and future behavior of sons, but only with current behavior of daughters (Schaefer and Bayley, 1963). Kagan et al. (1963) found the trait of conformity in adolescence to be related to maternal protection and affection for boys, to maternal restrictiveness and discipline among the girls.

THE EMPLOYED MOTHER. President Kennedy's Commission on the Status of Women, after 22 months of study on the major aspects of women's activities in American life, reported (in October, 1963) that in nearly 500,000 families with children under 6 years the mother is frequently the sole support; in 117,000 families with children under 6 only a father is in the home, and in almost 3,000,000 families with children under 6 the mothers work outside the home even though a husband is present. Burchinal (1961) in a study of seventh and eighth grade children in Cedar Rapids, Iowa, found support for the hypothesis that maternal employment had no relationship to selected personality characteristics of children or to social relationship patterns of children.

Marian Yarrow (1962), in a study of 100 mothers of intact families of middle and upper middle classes of a white population, found that the employment status of mothers was almost unrelated to child rearing patterns. The mothers' satisfaction with their roles varied. The dissatis-

fied nonworking mothers described more difficulties in the areas of control, less satisfaction in relationships with their children, and less confidence in their functioning as mothers. They were also rated by the examiners as lower on adequacy of mothering. Perry (1961) found no differences in the adjustment of preschool children of employed and nonemployed mothers. In this instance, it should be noted, the substitute mothers were found to be adequate in the care of the children left with them. Another study (Petersen, 1961) of over 600 adolescent girls in the tenth, eleventh, and twelfth grades found that maternal employment had no adverse effects on the mother's performance of her maternal role.

A Scottish study of 253 women during five years following the birth of their first child found that during this time 35 per cent of the women had been gainfully employed or had worked in the family business. Fifty-five per cent of them worked for financial reasons, although most of them enjoyed the change from household and child care work. There were other reasons, such as boredom with domesticity. Grandmothers played a major role as mother substitutes. The authors call attention to a distinction that should be made between "deprivation" and "temporary absence" of the mother. This study presented little evidence of harmful effects on family life of the mother's employment (Thompson and Finlayson, 1963).

Parent-child Separation. Separation of the child from the mother, according to Bowely et al. (1956), produces a permanently disturbing effect on the child. Casler (1961) found that loss of maternal love probably has ill effects on the child only if the separation occurs after specific affective responsiveness has been achieved.

Severe (abrupt separation into an inadequately staffed and equipped institution) deprivation of maternal care does result in less rapid social and motor development (Appell and David, 1961).

Father absence also has a significant effect on the child's development when children are old enough to be aware of the father's role in the home. In a Norwegian study of the effects of the fisherman father's long absences from home, it was found that boys in the father-absent homes showed immaturity; they were insecure in their identification with their fathers and showed stronger strivings toward father identification than did the father-present boys. They showed compensatory masculinity and demonstrated poor peer adjustment. Father-absent girls tended to become more dependent on the mothers than did the father-present girls (Lynn et al., 1959).

MATERNAL DEPRIVATION. The evidence on the effect of maternal deprivation is not uniform. Gardner et al. (1961) found that infants in a University Home Management House compared favorably with mother-reared infants in a series of tests and observations. Only the California Personality Test scores favored the mother-reared children. In later school achievement, personal and social adjustment, anxiety level, and response to frustration no differences were found that could be attributed to the factor of discontinuity of mothering in early childhood. This favorable result for infants in such Home Management Houses is doubtless associated with the high quality of infant care which typifies these houses.

Yarrow (L. R., 1963) studied the infancy and early childhood of 96 children placed in adoptive homes in infancy, comparing children placed in adoptive homes during infancy with

large enough to provide development in social contacts. Brody (1956) found that infants in such institutions may even be precocious socially and mature (for age) in their practical judgments and have some forms of emotional control prematurely developed.

The Role of the Father. The role of the father in the family is rapidly becoming a focal interest to the professional and the layman (Applezweig, 1961). The relative position of the father vis-à-vis the mother is shifting—the father becoming increasingly more affectionate and less authoritarian, and the mother becoming increasingly more important as the agent of discipline, especially of boys (Eron et al., 1961). Landis (1962) found the role of the father in family life an index of family integration. Closeness of children to either the mother or the father is associated with positive values, desirable behavior, and self-evaluation in the children. Postive family values are more closely associated with father-close relationships than with mother-close relationships. This study gives strong support for the belief that it is how the child feels in relationship to *both* parents that is the most predictive of personal and family values.

In general, mothers are more nurturant and less restrictive than fathers in the parent-child relationship. However, Emmerich (1962) states that a parent tends to exert more power or control toward the same sex than toward the opposite sex children. Although both boys and girls tend to view fathers as more competent and more punitive than mothers (Kagan and Lemkin, 1960). Burchinal (1958) found no differences between mothers and fathers in acceptance of one sex or the other. Hubbert and Button (1957) found that mothers enjoy their daughters more than they do their sons, while the father seems to identify with his son more than with his daughter. In contrast, Medimus (1961, a) indicates that mothers do not accept their daughters more than they do their sons. The conclusion here seems to be that there is a lack of specificity of the research data with regard to sex of parent in relation to sex of child. Nevertheless, a review of some of the recent studies in this area indicates the trends in the research findings. Fathers' attitudes are at least as closely related as those of the mother to child behavior problems and to maladjustment tendencies in children (Peterson et al., 1961).

A warm companionship between father and son relates clearly to the son's liking of others; it also relates to self-confidence, assertiveness, and skills in the peer group. With girls, affection for the mother counts mainly in the peer adjustment, particularly when the girl herself can initiate the interaction with the mother. Hoffman (1960) found a probability that the mother's love and attention make a boy feel warm and cozy, but fathers equip the boy to face the world. Both lead the boy to a feeling of being loved and accepted, but a positive relationship is associated in the boy with a high degree of self-confidence in his own abilities, with outgoing peer behavior, and with frequent attempts at influence, but with a low degree of physical force. It is also associated with success in influence and with nondependency, with athletic and intellectual ability, and with a tendency to respond realistically and adaptively to frustrating situations. A warm relationship between mother and son is not related to any of the above traits in the son.

The relationship of the father to his daughter is less important in predicting the peer group adjustment, although positive affect from the father does relate to a feeling of being loved and accepted, and is slightly related to impulsivity and self-centeredness: Hoffman (1960) com-

ments that "it may be that parents are more indulgent with children of the opposite sex so that positive affect and interaction take on a different context." Bronfenbrenner's data (1961) would support this interpretation.

Fathers play an important role in the development of deviant behavior in general but contribute especially to aggressiveness in their sons. Fathers of more aggressive boys appear to be more affectionate, to manipulate rewards, and to have more stereotyped sex role expectations. A different set of parental characteristics seems to be specifically related to dependency; e.g., sex anxiety in the child is related to rejection by the mother and to low self-esteem in the father (Winder and Rau, 1962).

Parental Practices in Child Rearing. Many studies support the fact that not only parent-child affectional and identification relationships but also parent practices in rearing children have decisive influence upon the development of personality as well as on physical welfare.

There are different hypotheses about *how* child rearing practices actually exert this influence. One set of hypotheses derives from *identification theories* which propose that the child adheres to parental standards as a consequence of an identification process whereby the child patterns himself upon a parent. Two motives are generally cited in connection with this process: (a) the desire to reproduce the gratification provided by a loved object (the parent), and (b) the desire to control, neutralize or protect oneself from a fearful, threatening or powerful object. Whiting (1960) suggests that these two kinds of identification are really based on the single motive of envy of the controller of resources.

Another theory of how child rearing practices exert influence on the child's behavior is based on *the effects of direct reward and punishment.* According to this theory an accompaniment of punishment is fear, which becomes associated with the stimuli involved when parental punishment of a forbidden act is administered. This fear becomes a secondary negative reinforcer which tends to deter the child from performing the response to this stimulus even when the parents are not physically present.

THE USE OF DISCIPLINE. Webster defines discipline: "To train or develop by instruction and exercise, especially in self-control." Discipline may range from a mild reprimand to a severe beating. Hymes (1963) recommends, for the child under 6, a mild reprimand that is easy to give and to take, but says that in certain instances physical punishment is in order. Barton et al. (1961) agree with this, and add that with greater cognitive development, and perhaps increasing identification, the psychological techniques gain in power to influence the child's internalization of parental standards. Rosen (1964) emphasizes the use of "love-oriented discipline: such as displays of affection, reasoning, and appeals to standards."

Walters (1963) studied the effect of timing of punishment upon the strength of response inhibition. He suggests that early punishment of any given act is more effective than late punishment in producing response inhibition. He found indication that response inhibition is more readily produced in girls than in boys. Azin et al. (1963) emphasize consistency in punishment. To punish an undesirable action sometimes but not other times appears to be ineffective. However, punishment that is harsh and unrewarding is inclined to develop children who employ denial as a defense against it (Miller and Swanson, 1960). With increasing severity and amount of punishment at home, children tend to show increas-

ing aggression at school. Children of high socioeconomic status who are punished severely at home are most aggressive at school, although there was no difference among the socioeconomic classes in differential use of psychological and physical punishment (Eron et al., 1963). Kagan (1963), however, found severity of maternal discipline inversely correlated with social class, greater severity being shown in the lower social classes. Middle class mothers' verbally expressed aggression toward their children correlated negatively with the amount of affection they displayed—the more expressed aggression, the less affection shown; the more expressed nurture, the more the mothers exhibited protectiveness toward their children (Crandall and Preston, 1961).

TYPE OF DISCIPLINE. This was found by Hoffman (1963) to vary with social class. Categorizing discipline focused on the consequences of the child's behavior as "consequence-oriented," and discipline explicitly oriented to the child's consideration for others as "other-oriented," Hoffman tentatively concluded in a study of middle and lower class urban families that when parents were high in power assertion, the effects of other-oriented and of love-oriented discipline resulted either in social withdrawal or in impulse control based on fear of punishment. When parents were low in power assertion, either of these forms of discipline contributed to socially acceptable behavior.

Peterson et al. (1961) found strict, cold, aggressive paternal attitudes were diffusely associated with personality problems and with autism (withdrawal from reality) among the kindergarten children they studied. These authors comment that this appears to be true of young children. They add that among older children considerable paternal firmness seemed necessary for the prevention of child conduct problems, whereas among the younger children they studied paternal affection seemed more important.

Unger (1962) found that unclear or enduring discipline is associated with increasing generalized patterns of guilty apprehensiveness, while high paternal nurturance (care-affection companionship) and predominant use of psychological (as against physical) disciplinary techniques are associated with the development of dependable, transgression-contingent guilt potentials in the child.

ABUSED CHILDREN. In response to reports of increasing physical abuse of infants and young children by parents or other caretakers, the Children's Bureau (Washington, D.C.) held conferences during 1962 to draft legislation for a state law to protect the physically abused child. Such a law would make it mandatory for physicians and institutions to report to police authorities physical abuse of children, based on medical findings. In addition to the proposed law, the Bureau issued a guide discussing the principles behind it. The guide points out that the primary responsibility for meeting children's needs rests with the parents, and that society is obliged to assume this responsibility when parents cannot or do not (Children's Bureau, 1963).

PARENTAL LOVE. Cox and Leaper (1961), in setting up the conditions for a study of parent-child relationships, define parental love (for the child): "The generalized definition of 'love' adopted in this study is that parents' behavior should be expressive of a set of attitudes which we term child-oriented, developmentally relevant, and child respecting. The child-oriented attitude is expressed in using childrearing methods that take account of what the child actually needs, as well as what the parents think he needs, and what they might want him to need."

It is possible, however, that the effect of using a *"too-much-love"* pattern of discipline may have the effect of undermining the capacity for initiative and independence (Bronfenbrenner, 1961). Clinicians sometimes observe that the greater permissiveness displayed in child rearing practices often involves insufficient setting of limits, with resulting anxiety on the part of the child who is concerned about limits and controls. It is speculated that sometimes failure on the part of the child to develop initiative and independence may be due to the fear of venturing forth into a dangerous situation where there are no warning signs or fences; or perhaps the lack of motivation occurs because nothing has been withheld. Overprotection at the extreme may have the same effect as underprotection, because the former frequently represents a reaction formation and means that the rejection aspects rather than the love aspects have communicated to the child (Layman, 1961).

An additional finding by Bronfenbrenner (1961,a) was that extremes of either affection or discipline are deleterious for all children, although the reaction of the child to these extremes differs between the sexes. Girls were found to be especially susceptible to the detrimental effects of overprotection, boys to the ill effects of insufficient parental discipline and support. As Bronfenbrenner sums it up: "Boys suffer more often from too little taming; girls, from too much."

SEX DIFFERENCES IN PUNISHMENT GIVEN OR RECEIVED. As a rule, girls are exposed to more affection and less punishment than boys. Girls are more likely to be subjected to love-oriented discipline. Girls are repeatedly found in studies to be more obedient, more cooperative and, in general, better socialized than boys of comparable age levels. At the same time, girls appear to be more anxious, timid, dependent and sensitive to rejection. If these differences in the girl are a function of differential treatment by parents, it would, according to Bronfenbrenner (1961,a), seem that the more "efficient" methods of child rearing employed with girls involve some risk of what might be called "oversocialization."

Girls receive from parents more affection, praise and companionship, whereas boys are subjected not only to more physical punishment but also to more achievement demands. In upper middle class homes, differential treatment of the sexes is at a minimum. Only in lower class homes is contrasting parental attitudes and behaviors toward boys and girls pronounced (Kohn, 1959). It is primarily at lower middle class levels that boys get more punishment than girls and girls receive greater warmth and attention. As families move up the social class scale, direct discipline drops off, especially for boys, and indulgence protectiveness for girls increases. This being the case, it can be expected, and in Bronfenbrenner's studies it was found, that girls excel over boys in responsibility and social acceptance primarily at the higher socioeconomic levels. In contrast, boys of the lower middle class excel over girls in such traits as leadership, level of aspiration, and competitiveness.

Sex and Ordinal Position of the Child in the Family. Variations in child behavior and parental treatment, strikingly similar to the differences cited above between the sexes, have been reported by Schachter (1959), who found that, like girls, *first born children* receive more attention, are more likely to be exposed to psychological discipline and to end up more anxious and dependent; whereas laterborn children, like boys, are more aggressive and self-confident.

"Being first-born in the family is

so strong a force in shaping personality that the position affects the course of an individual's life for better or for worse" (Neisser, 1957). One study found that first-born children show a greater tendency than later-born to conform or comply with the judgments expressed unanimously by members of a group (Becker and Carroll, 1962). Schmuck (1963), in a study of girls *in two-child families,* found that girls with a sister were more likely to defy other people than were girls with a brother. *"Only" children* do not think and behave like children reared with 6 or more siblings; they develop different role definitions and have different types of communication within the family (Moore and Holtzman, 1962).

Influence of Siblings. Koch (1960) studied 360 children, of 5 and 6, and found that children tend to play more often with siblings who are near their own age than with those who are less close in age. Those siblings who were near in age were strongly identified with and dependent upon each other and proved less experienced with other children than were most children. She summarized her study: "It should be clear that siblings influence each other in many and devious ways, and these ways, as they relate to formal characteristics of siblings, show patterns of some consistency."

Siblings in their relationship to each other may reinforce, positively or negatively, parental actions, and consequently may function to maintain or to change potential responses of a child to his parents (Sigel, 1956).

Sutton-Smith et al. (1964) summarized studies on sibling associations

FIGURE 28. Brother and sister enjoy each other. (Courtesy H. Armstrong Roberts.)

and role involvement and found indication that the *effect of ordinal position* and of *sibling sex status* vary with age and with the nature of certain other variables. The sex of a given sibling has stronger effects on adjustment, anxiety and interest inventories, while ordinal position has stronger effects on mental abilities. Boys affect girls more than girls affect boys; first-borns affect non-first-borns more than the other children affect the first-borns.

Sutton-Smith et al. (1964) go on to say that they assume the effects of ordinal position on the development of children are not due simply to the infant patterns of reinforcement, but that these patterns continue to be supported by later socializing patterns on the part of adults.

Rosen (1961) and Sampson (1962) refer to the higher achievement and responsibility training of first-borns, the greater amount of attention given to them and of preference for them. McCandless (1961) refers to continuous and changing influences of these sorts on the part of parents as "position-typing" influences to distinguish them from "sex-typing" influences in the lives of children. Girls appear to be more influenced in these and in other ways, by both their siblings and by their parents, than are boys (Winch, 1962).

Size of Family. In recent years there has been an increase in the size of the average American family—an increase that has been especially marked in the middle class, where more families than previously now have three or four children (Hoffman and Wyatt, 1960). In 1941, for example, studies showed that 27 per cent of the middle class families considered four or more children ideal; in 1955, 49 per cent considered four or more children ideal.

In 1959, 75 per cent of a national sample of women between 18 and 39 years of age expected to have two to four children. This stands in contrast to the 49 per cent of women of the same ages who, in 1955, expected to have this many children (Freedman et al., 1959). The increase in family size has usually been assumed by writers on the subject to be the result of technological advances and economic prosperity that have removed some of the hardships of parenthood. There seem also to be a number of basic motives for increase in family size, such as the changes in the role of women in our society, mechanical aids for homemaking tasks, the dignifying and upgrading of the role of parenthood in our society, and so forth (Hoffman and Wyatt, 1960).

The Population Bulletin (October, 1960) states that big families have their own educational attributes. When there are many brothers and sisters, the spoiled child is a rarity. Whereas good, wholesome neglect might once have heightened a child's ingenuity in occupying and entertaining himself, the population explosion of the 1960's means that children are available for playmates in virtually all neighborhoods. The advantages of belonging to a large family are no longer as apparent as they once were.

Children's Care of their Parents. One further note on parent-child and child-parent relationships may be relevant. With increasing life span, the family is giving care in dependency at both ends of the life cycle. Pollak (1964) comments that, with the increasing provision by parents for the care of their children, there is little provision in our modern family for make-up return service to be rendered to the parents' old age by the children.

THE SCHOOL

Breadth of Influence. Among community influences, the school is the one agency in this country and in many other countries of the world

that reaches, by compulsion of the law, all of the community's children who are physically and mentally able to attend. One significant change in recent years has been the spread of the school's influence to girls, who on the average now spend slightly more time in school than do boys (Population Profile, 1963). However, even today, compulsory education of more than 6 to 8 years is largely limited to the North American continent and to Europe. However, on these continents and now, increasingly, in the rest of the world, the school as a state-approved agency is reaching an important part of the impressionable years of all children (Brown and Hunt, 1961).

Contribution to the Education of the Child. Schools have certain stated objectives, among which are not only the teaching of basic subject matter but also the promotion of health, development of character and preparation for citizenship. The contemporary school pupil learns much, not only through adjustment to the curriculum, but also through a pattern of informal relations involving adjustment to a collection of parallel and cooperatively or competitively acting individuals engaged in the process of intellectual and emotional change. The more informal peer relationships affect the pupil's adjustment to formal learning and to the conduct demands of the school's culture. What he achieves in adjustment to these demands, threats, and competitions makes him a better or a less adequate student, and tends to make him become what he is supposed to be in this situation (Schmuck, 1962).

Next to the home, the most important agency in society for the transmission of the cultural heritage to children is the school. The home transmits vital attitudes, "trains" the child in basic living habits, serves throughout the childhood years as a translator or interpreter of those cultural mores which the child meets outside as well as inside the home. The school accepts the major responsibility for transmitting and translating or interpreting those aspects of the cultural heritage that have been formalized into "school subjects" such as history, science, etc.

The schools, however, are no longer limiting themselves to this job. Accepting the thesis that they must develop whatever aspects of personal-social-civic efficiency are not adequately learned elsewhere, the school has accepted a wider responsibility than the mere teaching of academics. The acceptance of these obligations to children has manifested itself in many ways. "Character education," "education for citizenship," "training for responsibility" are all familiar phrases to educators today.

The interest of schools in these non-academic areas is evidenced by the public and private *nursery schools* which teach nothing that would have been recognized by most educators as the business of schools at the turn of the century. These schools serve as an extension of the home upward in the fact that the equipment, program and teacher activities are geared to the physical, mental, social and emotional needs and maturity levels of the children. They have been influential in setting a pattern of home-school cooperation in working out mutually supplementary programs for the child's growth at home and school. They have also served a primary role in research and in personnel training programs in the field of child development in university and research centers.

There is a difference of opinion about how well nursery school experience prepares children for kindergarten. Saksensa (1961) found that children who had nursery school experience do not show significantly

greater ratings in brightness, in reading, writing or drawing, over children who had not attended a nursery school. But nursery school children do show an advantage in general comprehension and in arithmetic and they are markedly superior in personality traits.

Brown and Hunt (1961) found nursery school children now in kindergarten were rated by their teachers as less well adjusted to kindergarten activities, to their peers and in "inner adjustment" than were non-nursery school children.

Nursery schools, like all schools, are highly dependent upon the quality of the teachers (Reichenberg and Hackett, 1962), and upon the adequacy of equipment and facilities (Smart, 1962).

The *kindergarten* since the beginning of the century has served as an extension of the school downward. It was originally set up to give careful attention to the physical needs of children and to extend the child's intellectual and social horizons as a preparation for entrance to the first grade of school. Strang (1959) says that "the best preparation for success in the first grade is self-reliant living in the preschool years." Like the nursery school, the kindergarten was originally thought of as based upon the growth needs of children. Unfortunately, however, the kindergartens were too soon absorbed into the public school systems, there to suffer the restrictions of budget, the pressure of numbers and, most seriously, the pressure of stereotypy which at that time characterized the public schools of our country. The inevitable result was that, although the kindergarten was able to hold out against the traditional idea that schools should burden 4 to 5 year olds with reading and number work, they were, nevertheless, forced to surrender most of their physical health program and much of their home-school cooperation vision.

The number of *elementary schools* in this country that are conscientiously trying to meet the atypical as well as the average child's needs for formal and informal education is encouraging. Differences in intellectual capacity and in maturational levels of physical and psychological development are being recognized widely in both public and private schools. Course contents and methods of teaching are under constant study and are being made available to teachers and school administrators through a wide variety of educational publications and in-service training programs.

The Child's Adjustment to School

It has been emphasized that generalized experience is necessary for the learning of broad concepts and principles. Preschool activities as well as kindergarten can, as we saw above, broaden the child's experience, both intellectually and socially.

That children are, in general, fairly well prepared for school entrance seems evident in Koch's findings. Three hundred and sixty 5 and 6 year olds were asked, "Would you rather go to school or stay home?" Sixty-five per cent said they liked school, 24 per cent were indifferent, and 11 per cent said they disliked it. More girls than boys said they liked school and their teachers.

In adjustment to school routines children tend to take certain conduct prohibitions on faith. School increases the child's concern with what happens to other children and also increases the scope of their interpersonal relationships (Gump and Kounin, 1961).

Over a span of time, schoolchildren show maturation in moral values; they become able to see beyond the be-

havior that often gets them into trouble; and they begin to drop concern with self-centered consequences, like adult punishment, and become more interested in what happens to others. Progress is shown in such development from the first through the third grade.

Children who make high adjustment scores in the first grade show high attendance in kindergarten; they also make high scores on reading readiness tests (Hammond, 1962). Emotional difficulties, on the other hand, affect school success negatively (Dugan, 1962).

Personal and social adjustment is one of the predictive factors of success or failure in school. Good school achievers are generally those whose families helped them and stimulated them to do good work (Havighurst et al., 1962).

High and Low Achievement. A longitudinal study of the relationship of early school adjustment to adolescent and adult achievement showed that achievement striving during the first four years of school is a moderately good index of future achievement behavior during adolescence and adulthood (Moss and Kagan, 1961). This is, in part, a matter of positive behavior in general, high achievers being more able to control their motor responses, more able to look into the future, and more able to delay gratification than are under-achievers (Davis and Sidman, 1962).

Roberts (1962) found that low-achieving girls show significantly more problems in personality development than do high-achieving girls. Boys followed this pattern but to a less significant degree.

Among under-achievers, there are many children in the 90 to 110 IQ range, one-half of whom were found to be achieving less than their IQ warranted (Bruck and Bowdin, 1962). Many of these children were immature in self-concept.

Low-achieving children can often be helped to work up to their intellectual capacity by counseling and remedial help. Such help may also reach social and emotional causes of under-achievement, among which are restlessness, impulsiveness, undependability and irresponsibility, membership in peer groups characterized by (a) negative attitudes toward school achievement, (b) opposition to authority, and (c) restless excitement-seeking (Coleman and Hewett, 1962). Low achievement is also associated with peer group attitudes toward academic achievement (Morrow and Wilson, 1961).

An important aspect of the child's adjustment to school is preparatory independence training by the mother. It should be such that the child can leave his mother and can adjust to other adults and other children for the necessary time span for school attendance. One study found that if this independence training occurs too early in the child's life, children may have some difficulty in school progress, both in reading and in arithmetic, whereas later independence training proved a more favorable preparation for school (Chance, 1961).

The Dropout Problem. Many children and youth stay in school and like it. Some are preparing for college, which, as we shall see later, "pays off." Competition for entrance to colleges and universities is sharp; the preparation must be thorough. As some sage has said: "Chance favors the best prepared people."

The task of keeping the potential dropout child in school appears to be a matter of presenting and "selling" the values of staying in school (Bealer et al., 1964). A major factor in whether the young person stays in school or drops out appears to be the mother's

interest in and encouragement of continuation in school (Mannino, 1962). Young people in the lower socioeconomic classes have more financial pressures to leave school and, on the whole, less parental encouragement to remain in school (Moore and Holtzman, 1962).

Something, it seems, can be done about this. Keppel (1963) reported on a campaign to reach school dropouts, which resulted in the return to school of 51 per cent of the 59,301 high school dropouts reached. As a result of this campaign curricular changes were made and special programs of combined on-the-job and part-time schooling were implemented, along with scholarship aid where necessary.

A counseling-curricular-job program in Samohi High School in Santa Monica, California, 1964, proved successful in a continuation of part-time education for many youth. Dropouts in this program were found, on the whole, to have the following characteristics: (1) a reading retardation of one or more years; (2) general retardation in school progress of a year or more; (3) little, if any, interest in the extracurricular offerings of the school; (4) little academic stimulation from the parents, 46 per cent of whom were in unskilled jobs; (5) a record of preceding truancy.

Community agencies other than the schools have an interest in keeping potential dropouts (even those who have minimal possibilities for academic accomplishment) in school, since dropouts are prone to delinquency, ultimately get the poorest jobs, and have the most marital difficulties (Havighurst et al., 1962).

Adjustment to school is one of the developmental tasks of later childhood, as we saw above. It tests the child's ability to leave his mother and father and to adjust to school authority, schedule requirements, competition with peers in schoolwork, and demands for concentration of attention and development of good work habits. School is the child's job. During the elementary years he spends one-fourth and in high school about one-fifth of his waking time in school, taken on a year-around basis. How well he succeeds with this job will be of importance to his work life and to his feelings about himself for much of the rest of his life.

Adjustment to school once meant a sharp increase of nervous habits and other evidences of stress. In most countries where education is compulsory attempts to establish proper grade placement, to adjust the school pace to the varying grades of intellect, and similar recognitions of the individual child's needs have greatly reduced such difficulties as chorea (St. Vitus' dance), muscle tics and other psychosomatic illnesses. Some children, however, have such strong dependency relations with the mother that school does not change them (Stendler, 1954).

As is the case of the earlier grades, the *junior and senior high schools* have benefited from research in child development and continuing growth in educational philosophy and practice. The quality of education given in any specific high school has assumed special importance to the young people hoping to enter college. It is important that the young people who do not plan to attend college finish high school if possible. The financial wisdom of doing so can be seen in the following figures taken from a Kiplinger report of 1958:

Lifetime earnings of college students	$268,000
Of a high school graduate	165,000
Of an elementary school graduate	116,000

This is not intended to represent the value of a high school or college education, since it cannot indicate

the lifetime benefits of widened intellectual, personal and social horizons.

Influence of the Teacher. From kindergarten throughout the formal education of the child the teacher is probably the single most important influence exerted by the school on the child. This can easily be understood in the kindergarten where the teacher acts as a substitute parent, and in the early grades where the teacher has the child in a homeroom and for most of the subjects. Even in the upper elementary grades where the child has several of his subjects under different teachers, the homeroom teacher is important.

A pupil's learning is, in large measure, a function of the kind of teaching to which he is exposed (Goldberg, 1964). The classroom teacher is vital in the development of the child's capacity to think and reason. "A young child can become interested in almost any topic or idea which is brought to him in a meaningful way" (Wann et al., 1962). If, on the other hand, the teacher is of the wrong sort, children can reflect the impact in anxiety and in other tension reactions (Davidson et al., 1961).

The teacher who can effectively utilize the group process, and who understands and can deal effectively with individual children, is the one most likely to provide successful learning experiences for a group of children (Brinkmanns, 1963).

The rapid expansion of the school population has led to experimentation with *teaching machines* to take over some of the individual pupil's stimulation of learning. The enthusiastic adoption of these machines as aids to teaching seems to indicate their usefulness in giving the individual children the immediate reinforcement or extinction of responses made in the learning process and, therefore, increased efficiency in the learning of such materials as are adaptable to these methods (Wohwill, 1962).

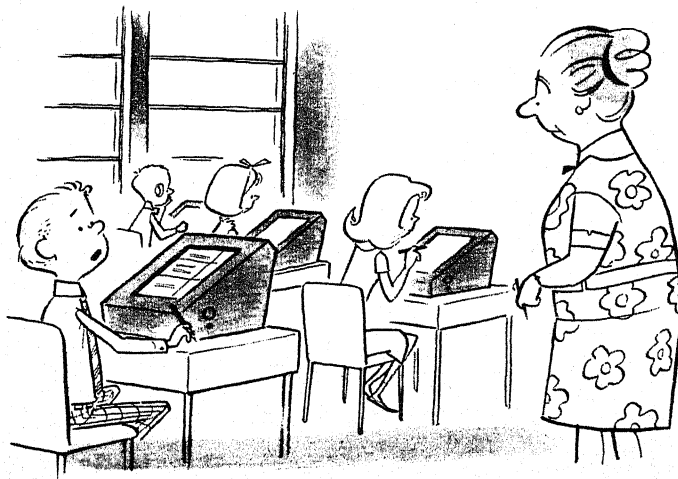
The most cogent criticism of these machines is, perhaps, that overuse of such methods at the cost of free pupil-teacher interchange is a genuine loss not only to the learning process but to the child's feeling about school as well. (See Fig. 29.) Pressey (1963)

"I miss the old give-and-take of classroom sessions."

FIGURE 29. (By permission of *Suburbia Today.*)

warns that more research should be done on the uniqueness of human learning (as opposed to animal learning) before a too precipitous adoption of teaching machines occurs.

One of the clearest evidences of the benefits gained by the schools from continuing research lies in the improvement of teacher-pupil relations. Teachers and administrators are noting and making use of knowledge about the needs and growth stages of children and are applying the principles and theory now available. For example, there is increased understanding that teachers' personalities leave a marked impression upon children's behavior and attitudes, that poor methods of approach by the teacher can, and often do, produce behavior problems in the classroom, and that good methods and an understanding approach on the part of the teacher make school not only a profitable experience for the children but a joyful experience as well. Doubtless if one were to search for the single most important factor in the teacher-child relationship, one would find that friendliness stands out in simple, direct forcefulness. Teachers are, as a whole, far more friendly in their relationships with children than they used to be, not only because there is a freer conception of education as a whole, but also because of a recognition of the importance of a good teacher-pupil relationship to the child's social and emotional development.

Continuing Problems. That there is much to be done in the direction of fitting the school to children's needs, particularly in making school

FIGURE 30. School children contribute to their community. (Courtesy Los Angeles Public Schools.)

FIGURE 31. The school prepares for today's world. (Courtesy Los Angeles Public Schools.)

meaningful to young people, is indicated by the American Council on Education. The proportion of youth who, even now, with recent large increases in high school and college registration, leave school at the end of the eighth grade or at high school graduation, is indicative of the fact that schools are not meeting the needs of many adolescents.

Difficulties in meeting high standards of individualized education for different types of children have been made all but insurmountable by the avalanche of children that has been pouring into the schools as a result of the sharply increased birth rate following World War II and continuing into the present. The Rockefeller Report on Education (1958) shows that there was spent on formal education in the United States nearly 14 billion dollars distributed as follows:

	*Billions**	
Public elementary and secondary	$9.4	(67.0 %)
Private elementary and secondary	1.2	(8.6 %)
Public higher education	1.5	(10.7 %)
Private higher education	1.9	(13.7 %)
	14.0	(100.0 %)

In spite of these expenditures, which have increased considerably since 1958, and the fact that many local communities have built greatly expanded school facilities, 840,000 children were on half-day school schedules in 1958 (Brown, 1959); there are still many children on part-time sessions in 1965.

*Figures from The Pursuit of Excellence: Education and the Future America. The Rockefeller Report on Education. New York, Doubleday & Co., Inc., 1958, p. 34.

Contribution to the Health of the Child. Because schools either knowingly or unknowingly affect children's physical as well as mental health in vital ways, we shall turn now to consideration of the role that schools not only do play but could play in providing for children's physical and mental well-being.

By health we mean something more than absence of disease or infirmity. The World Health Organization defines health as a state of complete physical, mental and social well-being. Essential to healthy development is the ability to live harmoniously in a changing total environment. This concept was expressed by Pericles about 400 B.C. when he said that health was the state of moral, mental and physical well-being which enables an individual to face any crisis in life with the utmost facility and grace.

The school should do everything possible to provide a physical environment which is conducive to physical well-being and working efficiency, an atmosphere which is conducive to mental health, and in which stimulation to learn is provided without undue nervous tension. There should be an opportunity for each child to achieve his own potential and to know satisfaction in this achievement, to learn to work and to play with others, to share and to work for a common purpose, to learn to accept and like those who are different. In the school as well as the home the child is achieving his developmental tasks.

HEALTHFUL SCHOOL ENVIRONMENT AND PROGRAM

Schools need to be planned, as we have said earlier, in relation to the development and needs of the particular children who will spend so many hours of their day in school. The site for the school, the plan of the building and the equipment for the use of students and teachers are all important. The new schools are nearly always functional, adaptable and esthetic. They are planned to provide for a variety of educational experiences in a healthful environment where space, light, heat, ventilation, toilet facilities, locker space and equipment for work are provided in a manner which allows for safety, health and comfort of pupils and teachers (Nemir, 1959). However, many children still must attend schools with poor buildings and inadequate facilities.

A child's eyes are of vital importance in his education. When he enters school he begins to use them more and more for close work. Their protection is, therefore, the concern of teachers and school administrators. Adequate lighting, the placing of work spaces to use the light effectively and the proper selection of materials such as paper and books deserve careful attention (National Society for the Prevention of Blindness, 1951). Factors that produce eye fatigue, such as inadequate light, inappropriate seating in relation to the source of light, glare, too fine work or book print which is too small for comfort, need to be eliminated. Most schoolrooms are planned for right-handed children. Those who are left-handed need to be placed so that their work space is properly lighted.

Desks or work chairs need to be such that a child may sit comfortably in good posture. Placing furniture in the proper relation to the source of light has been mentioned. Movable desks and chairs have an advantage over the stationary kind in that they can be moved about at the convenience of pupils and teachers. The size and construction of the chairs can conform to the size and body proportions of the children using them. Chairs that are too small or too large lead to bad postural habits and all the attendant physical and psychological difficulties. Because children

of any given age vary in size and build, adjustable desks and chairs are almost a necessity.

The school environment and its program should be so planned that everything contributes to the child's efficiency in learning, to his developing personality and to his practice of desirable habits. At school the child can be gaining (1) knowledge about himself and his needs, and (2) experience in providing for those needs. By so doing, he will be ready to assume complete responsibility for himself when the time arrives for his independence from his family.

Health Services. The first aspect of a school health program has been discussed. The second is the provision of health services that are child-centered rather than defect-centered. It is believed that health services for the school-age child should be family-centered and family-oriented, that the family physician should be directly responsible for a child's health, with the school team cooperating with him. This team includes the teacher, doctor, dentist, nurse, psychologist, psychiatrist, physical education teacher, vocational guidance counselor and any special therapists that may be needed for a particular child.

This team is concerned first with protecting the child from disease. This can be done through encouraging immunization against communicable diseases that can be controlled by careful compliance with the Board of Health's regulations regarding all communicable diseases and by early isolation of children who are not well (American Academy of Pediatrics, 1957). Early recognition of a sick child and his removal from the group lessens the chance of spreading infection to others. If a child has any of the following symptoms, he should not be in school: red and running eyes, running nose, coughing and sneezing, severe pain, dizziness or faintness, swelling about the neck, sore throat, unusual paleness, earache or running ears, feverish appearance, rash, nausea, vomiting or diarrhea, tiredness, irritability or crossness, or other change in the child's usual behavior. Common infections found among schoolchildren are those of the upper respiratory tract. Respiratory infections are the largest contributory source of school absenteeism and can have serious effects upon health. These illnesses amount to 92 per cent of all the illnesses of the children. A cold, for example, may lead to an ear infection which may, in turn, affect the child's hearing. The school can encourage parents to keep children at home during the infective state of a cold. It can also encourage, if not require, teachers to remain away when suffering from a cold or sore throat.

The school team is also concerned with early detection and correction of remedial conditions through regular physical examinations, teacher observation and reporting of signs and symptoms of difficulties, screening tests for vision and hearing, conferences to discuss children, consultation with the family physician and conferences with parents. In addition, the team provides first aid and emergency measures and protection against accidents (Shaffer, 1958). Also, it can be sure that children have a periodic check of height and weight which can, by following the progress of a child's growth, keep the school and home aware of accelerations and decelerations in gains so that the child's regime can be planned accordingly and contributing factors in his environment be examined. The school also provides for the special needs of handicapped children.

In the past the elementary school child has received more service than the high school student. Now more

emphasis is being placed on health service in high school, with more counseling facilities and counseling by the physician on a highly individualized basis. Lesser (1958) states that the problems of the adolescent may well be the major challenge of the present generation just as infant mortality was for the previous one.

The Teacher's Role in Health. It has been indicated that the teacher is a member of a team that functions to protect the health of the children. In order to be effective in this role the teacher must first be in good health herself. Good health provides a teacher with energy to meet the demands of the school day; lack of energy limits her ability to cope with the day's problems and to work creatively with her children. She is a better teacher when she is physically well and when she understands herself and her motivations and is able to tolerate frustration and defeat. Thus, it is important that she protect her own physical and mental health by having developed a good set of habits of eating, sleeping and activity along with sound attitudes. In addition, regular medical and dental check-ups provide the assurance of minimal physical difficulties. X-rays of the chest reveal any possible chest infections. Schools which require all teachers to have yearly chest x-rays are protecting both teachers and pupils.

In addition to protecting her own health, the teacher can detect the early beginnings of physical and emotional difficulties in her pupils, provided she knows her children well, knows the early symptoms of illness and deficiencies and is a keen observer.

The teacher also has a role to play in helping the child to understand his physical needs. She can guide him in understanding the reasons for their importance and, by serving as a model through her behavior and attitudes toward eating, sleeping and all the other physical habits, she can encourage good practices and attitudes in her children.

Health Education. The third aspect of the school health program is health education. In its physical education program it can insure vigorous physical activity designed to meet the child's stage of strength and physical development, and to teach him team play, as we see in Figure 32. Whittier (1961) studied the school physical education program as experienced by 12 year old boys exposed to two physical education programs, one good and one poor in quality, and found "profound differences" in the results between the two groups. In the good program the boys surpassed the poor-program boys in physical fitness tests and other tests of strength. He also found that the boys who participated in many out-of-class physical activities showed decided superiority over those who did not.

In another study of muscular fitness in young people in Danish and American schools, physical education programs were compared (Knuttgen, 1961). The Danish girls exceeded the American girls in all seven of the physical fitness tests used, 70 per cent of the Danish girls exceeding the 50 percentile of the American girls. Although the Danish boys did not exceed the American average by that much, they did exceed it in six of seven events. The author suggests that these differences may be associated with the fact that Danish children are, by necessity, more active than American children, having to walk or cycle to school, when many American children are driven or go to school by bus. Almost no Danish teen-agers own cars. There is also a distinct difference in the physical education programs, programs in active com-

FIGURE 32. Physical education contributes to health. (Courtesy H. Armstrong Roberts.)

petitive sports being more extensive, and the number of boys and girls devoted to gymnastics being higher than in America. There is a difference, too, in the participation in sports by adults, about 45 per cent of the total population between 15 and 40 years of age being active in sports in Denmark.

In its nutrition programs, the American school can play an important role in the health of children and adolescents. It can cooperate with the parents (Gladston, 1958) and supplement the learning in the home or, when the home fails in this function, the school can be the primary agent in providing the child with information and positive attitudes regarding his health. Thus, the school can help him to assume responsibility for his own health in a reasonable, healthful manner. For some this means reinforcing already learned habits, for others it means changing habits. This can be done through presenting information in a way that is meaningful and acceptable to the child by teachers who not only can give the information but can do it convincingly and with an understanding of the beliefs, attitudes and behavior of the families of their pupils. In order to make this information functional, experiences for demonstration and practice are essential.

Children can learn about their growth and that of others while being weighed and measured. One school had 13 to 18 year olds follow their growth progress on the Wetzel Grid and discuss factors that might be contributing to deviations in their growth pattern (Clemmons, 1954). As a result

they were motivated to improve their habits when it seemed advisable. While receiving first aid a child can learn the reasons for such procedures. Physical examinations and vision and hearing tests can also be made meaningful to the child rather than just a routine that is a nuisance. Nutrition education can be geared to the rest of the school program, to the school lunch, to the strengths and weaknesses of the diets of the children, and to community resources. Trips can be made in the community, perhaps to see a produce market in a large city, the sanitary control of the water supply, a public health laboratory, the canning or freezing of food, an example of scientific farming. Thus, the many facets of health education can be made a vital part of the school program and of real significance to the child.

Nutrition education has been shown to be effective in improving children's eating habits. One study demonstrated improved selection of school lunches after a group of fifth graders had a nine months' unit in nutrition which included a variety of experiences relating to nutrition (Grant, 1950). Another study demonstrated improved food habits following a school nutrition program which was a part of the total school program (Whitehead, 1952). It was integrated with the day-to-day teaching and learning and also with the community health program. It was developed with the cooperation of the teachers, after careful observations had been made in the school and the community so that it would fit the needs of the children. These illustrate two different ways in which a school can teach nutrition effectively.

The School Lunch. The school lunch can have both health and educational values. It can contribute to the health of children if it provides the proper share (one-third) of the day's food requirements, if it is planned to share in the total day's requirement by supplementing the home diets, if it is eaten in leisure in comfortable surroundings. For all children a substantial lunch means energy for the afternoon's work and food to grow on; for some it may mean the only good meal of the day.

As well as giving the child necessary nourishment, the school lunch can offer other advantages. It can extend the child's knowledge and liking for a variety of foods; it can help the child to establish standards for food and for table behavior by observation of others and by guidance from teachers. It can be the place where he practices that which he has learned about health in his various school experiences. It can also be a force in the community for the promotion of better food habits. For a school lunch to achieve these objectives it needs to be an excellent regimen, well planned, well supervised, and made a part of the total school and community program. All school cafeterias do not, unfortunately, measure up to these criteria and, therefore, contribute little to the real nutritional needs of the child and less to his education.

HOME-SCHOOL COOPERATION

The Need for Mutual Understanding. Home-school understanding and cooperation are generally accepted as basic to smooth continuity of growth as the child moves from the home into the new and different environment of the school. This is important not only as he enters kindergarten (or nursery school) but also as he moves back and forth between home and school throughout his formal educational experience. The school must remember, however, that not every parent sees eye to eye with the school

or with every other parent in his ambitions for his child. As long as we remain a democracy the parent has a prior right over the State in determining many things about his child. No parent, under our law, may neglect a child's food, clothing or shelter, nor may he abuse his child or contribute to the child's delinquency. Nor may any parent keep a child out of school during school age; but the parental attitude toward the school may sabotage anything the school might try to do for the child.

Fortunately, however, only occasional parents have any attitude but a constructive one toward their children so that, given even a modicum of encouragement from the school, cooperation with the school is dependent only upon parental understanding of what the school is trying to do. The home, of course, must realize that the school serves many children and cannot always make adjustments to all the needs of any one child. Plans for home-school contacts should be a conscious part of the program of every school.

Report Cards. Parents should be kept informed of school regulations as well as of the individual progress of their own children. A formal report card, requiring the parents' signature, is the usual system, but many schools are revising the traditional form of their report cards. An occasional outstanding school calls a parents' meeting from time to time to discuss such matters as the form of report the parents consider desirable and the teachers find practicable. Such use of parent-teacher meetings for active discussion of school policies, which so intimately concern both teachers and parents, injects a meaningfulness into school-parent clubs which many such clubs lack at present. Some schools have experimented in the early primary grades with the abandonment of any form of formal report to parents. This seems to work in situations where parents understand the reasons for such a program and where a personal conference with the parents at periodic intervals keeps the parents informed about the child's progress and adjustment. It fails wherever the move is made without sufficient understanding and support from the parents and wherever the children and the parents are left "dangling," without any progress reports or information about whether or not the child is "making good."

Most parents are interested parents; they want their children to learn to adjust to the school job since they realize that, in a certain sense, success with this job predicates success with "life" jobs; they want to cooperate with the school in seeing that the children do learn how to make this important adjustment. The school that fails to utilize this interest not only misses an excellent opportunity to serve the community but also loses invaluable information about individual children that would make its work substantially more efficient.

OTHER AGENCIES AND EXPERIENCES

Teaching Value. As we have suggested elsewhere, some teachers and school administrators are inclined to limit their thinking about developing citizenship in children to the role played by the school. They tend to neglect the nonschool influences that operate during school age and that often are far more potent than the school in forming habits and attitudes. Nonschool agencies always did, and still do, have a vital function to play in the education of children for life.

That the school is only one of the community agencies that teach citizenship or that affect the lives of children, both while they attend school and after

they leave school, becomes evident when we consider the number of children who pass beyond the influence of the school at a comparatively early stage in their development toward mature adulthood. Although by 1950 all states required school attendance at least up to 16 years of age, the Midcentury White House Conference on Children and Youth reported that enforcement of school attendance up to these years is still lax in most communities.

We may gain a partial insight into the number of agencies other than public schools which touch the lives of children when we consider the religious, social, welfare, recreational and other agencies, federal, state and local, which exist for the welfare of children.

Many of these agencies prove to be concerned with the care of children in the bottom sector of the population —the ill-fed, ill-clothed, ill-housed. Many are concerned with the prevention or correction of delinquency or other problem behavior. Some are caring for children from broken homes; some are nursing sick children back to physical health. A few, working alongside the school, the church and the home, are broadening children's horizons, developing their talents and appreciations, and providing enrichments for body and mind. Some, like radio, television, movies and comics, are both destructive and constructive, depending upon the quality of what they offer; but, whatever the offering, these four influences have multiplied their power over children in a geometric ratio in recent years, as we shall see in Chapter 6.

THE CHURCH

As we proceed further with the constructive forces in the lives of children, we find the church the largest organization, besides the school, which attempts to guide standards and attitudes of children. Whereas medicine, public health, recreational programs and the like take primary responsibility for the physical development of children, and whereas schools take primary responsibility for intellectual development, the church is regarded as the organized agency whose chief responsibility it is to oversee the spiritual development of children. There are many academic schools which exist under the control of the Church rather than of the State. It is true, of course, that nearly all schools take some responsibility for physical and character development as well as for intellectual growth.

Formal Spiritual Training in the Church. Many modern families do little about formal spiritual training of children, tending to turn that responsibility over to the church, if they give it any attention at all. Unfortunately, church affiliation, per se, and even church attendance are no guarantee of well-developed character (Peck and Havighurst, 1960). Family worship is no longer widespread. Most families, however, have a well-defined and clearly practiced "social philosophy" and a high sense of "ethics." This being true, the children in these homes gain fairly clear beginnings in ethical practices and fairly adequate social viewpoints. They do not, however, as a rule, have any help in the verbalization, and hence clarification, even of such principles as the parents themselves verbalize. They may grow up with the conception that there is no wisdom or strength in the universe beyond themselves or, at least, beyond mankind. Many such people find themselves getting along quite smoothly until some crisis of life arises. They have few, if any, of the solutions for life crises which the race has accumulated, solutions which are usually passed on through religious tradition. Lacking this, they have

deficient strength with which to meet major life crises.

Sensing this need for fortification in periods of crisis, sometimes sensing, even though they do not have it themselves, that there is some viewpoint or contact which can enrich daily living, many parents who do not themselves belong to or attend church send their children to Sunday school. All parents who find strength in religious practices wish to have their children find the same strength. There is, therefore, a fairly high proportion of children who are at least exposed to the influence of the Church, the Synagogue or the Temple. This proportion has been increasing since World War II, as has the proportion of families who join churches. Many newspaper and magazine articles since 1950 report this trend, based upon figures which show church membership in nearly all denominations increasing more rapidly than the increase in population. The Survey Research Center of the University of Michigan in a nation-wide study of adolescent girls found in 1956 that 78 per cent of 7 to 10 year old girls attended church regularly; 84 per cent of 10 to 13 year old girls and 85 per cent of 14 to 17 year olds did so.

Educational Methods. The religious concepts or ideas which many children have are confused and distorted. Unfortunately, these distortions are not often evident to the adult who has unwittingly instilled these ideas. Although many churches now use trained teachers and good educational devices in their Sunday schools, many still fail to do so.

Poor methods of teaching result in a prolongation of such immature conceptions as that God is a man with a flowing beard who keeps books on sins, or that prayer is supposed to grant personal wishes of the moment regardless of how these wishes may affect others. Children naturally tend to pray for small things. If they are not helped to broader concepts prayer may become a habitual "begging ritual" (Fahs, 1954). Religious concepts, like other concepts (see Chapter 9), are taught most effectively when they are associated with the daily experience of the child; they must stand the test of modifications which broadening experience makes necessary.

God should be introduced to children at an early age; but words and stories alone are not enough. Sears (1964) says that to guarantee that our children will be good, law-abiding citizens, parents should go to church themselves; should bring the child to church as a baby; should not ever "graduate" to the place where they *send* the child to church, but rather, should *take* him; should teach the child from infancy that he *cannot* have what he wants when he wants it, but must develop self-control, patience, and constraint—traits which they cannot teach their children unless they practice them themselves.

Children must *experience* basic religious concepts such as trust in others, cooperation, the joy and value of goodness and of love. Only in this way can religious concepts keep abreast of the growing life experience of the individual. This does not mean half-formulated ideas but rather that God should not take on anthropomorphic outlines, being "an old man sitting on a throne," passing judgment on each good and each bad act, handing out rewards and punishments by whim or upon being bribed or wheedled. This is actually the concept that many children get from formalized church school teaching, as learned from several years of church-school samplings made by the Merrill-Palmer Institute in religious education experiments. That God's rewards and punishments follow orderly law, or that God is a Spirit far more omniscient and omnipresent than is possible for a

person sitting on a throne in the sky seems inconceivable to many young people trained in dogmatic parroting of Bible quotations which were beyond their comprehension as children.

It is because of this type of meaningless teaching that many children come to dislike Sunday school and to put up a weekly battle about going. Part of the difficulty is due to rather haphazard instruction by volunteer teachers who have no special training.

There seems to be an increasing understanding on the part of religious leaders that religion can become functional and vital to children and young people only when the precepts are carried into practice, and that it is part of the business of church schools to see that this happens both in the family life of the child and in his relations with the wider community. Many of the more modern Sunday schools are employing trained teachers and are offering freer programs, with dramatizations of Bible stories and other group socialized experiences which give children not only the inheritance of a knowledge of the Bible but also a practical experience in cooperation and teamwork in "Love thy neighbor as thyself." Young people's groups are offering many types of activity, not only as social experiences for the young people themselves, but as services of the young people's groups to the church and to the wider community.

Church school projects which cooperate with other agencies in the community are doubly useful in teaching teamwork and group spirit in a world in which cooperative work in the home is diminishing. In the old days of weaving, baking, washing and cobbling in the home, parents and children worked together on projects which were clearly necessary for the well-being of all. Few of these chores remain in the modern home to teach such cooperative production for the good of all. Schools help somewhat by the cooperative projects which they create. However, these projects are usually centered around the children themselves, promoting the learning or the housekeeping or the play interests of the participants. Sacrifice for an ideal, or for people not in your own immediate group (and, therefore, from which you do not yourself as a member of the group, reap benefit) is not frequent in the life of the weekday school. Teaching of this wider sacrifice seems the realm of the church school.

This should not be misunderstood as indicating that mordern educators assume that activity programs are the most important part of spiritual education. There must be spiritual counsel, knowledge about the great basic principles of faith and insight, and about great spiritual leaders. There must be time for and the habit of prayer.

Summer Camps

Since 1900 the spread of summer camps for boys and girls has been rapid and steady. Nearly every state now boasts dozens, ranging all the way from the free camps for underprivileged children, supported by newspapers, service clubs and Community Chests, to the expensive private camps, which provide every sport and luxury of living. Children of all ages, from 2 year olds through adolescents, attend. Preschool camps are, however, a fairly recent development.

There are not only 24-hour-a-day camps but innumerable day camps and play groups where supervised recreation is the program.

Summer play schools have, since their development during World War I, demonstrated the feasibility of group programs for children which offer excellent physical care and informal educational opportunities to children whose summers would other-

wise be spent in crowded city slum homes and on the streets. Many of these programs are centered around settlement houses. Such programs provide a hot noonday meal carefully planned for nutritional value and mid-morning and midafternoon milk or fruit juices. Daily naps and showers are gladly accepted by children from hot, overcrowded homes where no one goes to bed until the coolness of late evening hours has tempered the heat of the rooms and where baths are not easy to get. Creative play, arts and crafts opportunities, story and reading activities all help to provide a well-balanced day. Children characteristically gain weight under these programs, returning to academic schools in the fall in far better physical and psychological condition than would otherwise be possible. For the numberless children who cannot leave crowded cities for summer camps, these play school projects provide a type of care which is invaluable for the children's growth and well-being.

One of the greatest contributions of these play schools and of nursery schools to education in general lies in their recognition of the importance of parent education and the cultivation of parental cooperation. Talking over with parents physical examinations, daily schedules, food values, the program of rest in relation to the children's growth and well-being often leads to talk about children's individual personalities and adult-child relationships. Visits by parents to the schools, planned parental participation in the school day, invitations to parents to "come to lunch with us," to help plan and conduct trips, to drop in on extemporaneous plays and story-hour projects all help to make the parent feel at ease in the school, to give an opportunity for informal, friendly teacher-to-parent and parent-to-teacher education. Such cooperation helps the school to adjust the day's program to the needs of each child as determined by the exigencies of his home life and also helps parents to plan such adjustments as are feasible in the home program to fit around the school activities. Thus, home and school working together, day by day, achieve a successful summer of growth and well-being for the children. There is much of the home-school relationship in these programs which could, and should, be adopted in winter school programs to promote a genuine improvement in the total growth and well-being of children. Camps may also serve as child laboratories for the training of child development and other professional workers with children.

Camp programs range all the way from a detailed scheduling of every half-hour of the day to informal play-and-do-as-you-please programs. In view of the rigid scheduling demands made upon most children during the school year, there is a desirable tendency in the more modern camps in the direction of freer programs.

Overnight camps exert a considerable influence upon the life of the modern city child (Shaffer, 1958). Probably their greatest contribution, if they are well run, is physical. The sunshine and out-of-door play, the healthy appetite for meals, and the regular hours of sleep often make all the difference in a child's physical stamina for the following winter. Many children actually lose some weight in an active summer of camp life, only to gain much more than the amount lost as soon as they return home. Many children, however, particularly underprivileged children, gain steadily after the first week of adjustment. Camp also makes a contribution to most children's physical skills. Riding, hiking, swimming and skill games widen the repertory of physical skills and sharpen interest in physical play. It trains the child for life by training

his body, increasing his love of exercise and developing his self-confidence. As the child learns to overcome fears related to physical activities such as swimming, riding and overnight hikes, he inadvertently learns much about overcoming psychological fears. Courage can, perhaps, be defined as that which one possesses when one has learned to face fear. Thus, by increasing command over the body and by teaching courage, the development of physical skills makes an important contribution to mental health.

Camps also exert a strong influence on social adjustment and moral values. Because children live for 24 hours under the influence of camp counselors and are required, not only in play but also at meals and during rest and sleep hours, to adjust to other children, progress in social adjustment is often rapid. Camp promotes the weaning from dependence upon parents which is an important part of total social growth. Close living with people other than the family teaches self-control and consideration for others as they cannot be taught at home. Parents, by virtue of the fact that they are parents, are always *with* a child and *behind* him, no matter how badly he behaves. People outside the family have no such obligation and can withdraw support or companionship whenever the personal relationship becomes inconvenient or disagreeable. Many children learn self-discipline in camp for the first time and discover that the best way to get along with others is to temper what one wants to do with consideration for the rights and wishes of others.

Another contribution of camps, as well as of good schools, lies in teaching children joy in work. Satisfaction in a job well done, the ability to put forth continuous effort in work and to find creativity in doing so is one of the basic, unshakable foundation stones of the truly healthy personality. In camp, the summer of constant effort may be crowned by the ability to swim 50 yards. Housekeeping, waiting table and other "work" can become fun as the child performs cabin duties in a group and as preliminary to hours on the beach.

Thus, work becomes fun, play aims at a goal of perfection, and a "passion for excellence" is achieved for many children who would not develop it otherwise.

Other Community Agencies

Other community agencies such as those for adoption and for care of dependent children, visiting nurses, visiting housekeepers, hospitals, juvenile courts, settlement houses, public playground and recreational centers contribute much to child growth and development. Next to schools, churches and camps, the agency that probably affects the greatest number of children is the hospital through its inpatient and outpatient services. We have spoken in Chapter 1 about the effect of illness and a hospital stay on children's feelings and behavior and of the need for doctors, nurses and other hospital personnel to understand children's personalities as well as their bodies.

Hospitalization. Hospitalization with the mother present has served to overcome both physical and psychological difficulties in children who had previously suffered traumatic reactions when hospitalized in a situation where the mother had been excluded. The subsequent hospitalization proves to be a helpful experience for both the child and the mother and furthers the solution of the problems previously created (Solnit, 1960). The strong suggestion from such a study is that children should not be separated from their mothers when hospitalization is necessary.

A pediatrician and a psychologist (Brelicka and Olechnourez, 1963) have worked for seven years in prevention and treatment of the maternal deprivation syndrome in hospitalized infants and young children in Warsaw, Poland. They have called this syndrome "hospitalitis." It consists of a failure to thrive physically and in social and psychological development and is a result of the exposure of the hospitalized child to numerous traumatic factors and of the frustration of those inborn needs which are normally met in a family environment. In extreme cases it may be manifested as a general marasmus, or wasting away.

Protection against frustrating factors such as pain, fear, and feelings of isolation is an important part of the program of prevention. Friendly and delicate handling during medical examination and nursing care is regarded as especially important.

These authors found that technically efficient nursing was not enough to eliminate the damage of hospitalitis. They concluded that the only way to ensure adequate care of a child in a hospital is to create an emotional bond between the adult nurse and the young patient, thus combining nursing and mothering.

Robertson (1963) reports on a number of letters from British parents describing mothers' experiences of rooming in with their hospitalized children, unrestricted visiting and associated difficulties, staff attitudes, and children's reactions after return home. He summarizes these by urging the importance of permitting and encouraging a procedure that does not separate the young hospitalized child from his parents.

We would like to report here a further note on how hospitals affect children. Robertson found that young children experience three phases of settling into a hospital; he calls these protest, despair and denial. The latter two phases are often misconstrued by hospital personnel to mean that the child has adjusted to the situation, whereas he actually needs special care in these stages. Since some children demonstrate disturbed feelings and behavior as the result of hospitalization, he advocates either that young children not be hospitalized if there is any possibility of adequate care at home, or that the mothers be admitted with their children and allowed to help care for them. Some hospitals now do this, and the practice is increasing.

EXPERIENCES TO VITALIZE CLASSWORK

1. A. Invite into your class two or three successful mothers of school-age children. Encourage them to discuss:
   - a. What happens to their children before they get off to school in the morning?
   - b. What happens to them during the noon hour?
   - c. What happens to them after school and until they go to bed?
   - d. What happens to them over week ends?
   - e. How much work or home responsibility does each of their children carry?
   - f. How many clubs do their children belong to? How many special lessons do they take?
   - g. How much to they listen to the radio? To television? To what programs? With what resulting effect? (Preserve this information for discussion of Chapter 6.)
   - h. How often do they go to the movies? What kind of movies? With what resulting effect? (Preserve this information for discussion of Chapter 6.)
   - i. How many of their children go to church school? Receive religious instruction at home? What methods of instruction are used?
   - j. How much spending money or allowance does each child have? What does he do with it?
   - k. What hobbies does each child have?
   - l. What part have the fathers been able to play in the care and guidance of these children?
   - m. What occasions arise for discipline? What kinds of discipline seem to work best?
   - n. Discuss with these mothers some of the

recommendations for routines and discipline found in your readings. How practical do they prove to be?

B. If the mothers cannot visit your class, have two or three members of the class visit one home each and obtain the same information. Bring it to class for discussion.

2. Contrast the following two school schedules for "fit" to children's growth in your community. Consider the job of getting the school work done, sunshine hours, frequency of bad weather, number of children who go home for lunch, age of children involved, predominant working hours of fathers (as this relates to family meal hours and bedtime) and other relevant factors.

School A (Elementary)	School B (Elementary)
8:45 School opens	8:30 School opens
9:00 Classes begin	8:45 Classes begin
10:30 Recess – Mid-morning milk or fruit juice and cracker	12:00 Dismissal
10:45 Classes resume	1:00 Classes resume
12:00 Dismissal	2:30 Recess
1:30 Classes resume	2:45 Classes resume
2:30 Recess (if good weather)	3:30 Dismissal
2:45 Classes resume	
3:30 Dismissal	

3. Contrast the following schedules for high school pupils:

Child X in School C (Senior high school)	Child Y in School D (Senior high school)
8:15 English	8:45 Mathematics
9:00 Gym	9:30 Spanish
9:45 Study hour	10:15 Study
10:30 Shop	11:00 History
11:15 Mathematics	11:45 Lunch
12:00 Spanish	12:30 Shop
12:45 History	1:15 English
1:30 Lunch	2:00 Study hour
2:00 Study hour	2:45 Gym
2:45 Dismissal	3:30 Dismissal

4. Visit an old school and a modern school. Observe and compare how the building, grounds plan and facilities of the two provide for effective learning and healthful living.

5. Recall your own childhood. Did the schools you attended make any genuine attempt to win the good will, understanding and cooperation of your parents? If so, with what result? If not, why not? Outline a practical home-school program which would help children both at school and outside of school.

6. Recall the Sunday school you attended as a child. Plan a desirable Sunday school program for that church which would meet the spiritual growth needs of the children who attend. How would you select leaders who understand the needs and interests of children of various ages? What equipment and program would be feasible in that church?

7. Do any of the agencies in your community sponsor camps? What types of children do they serve? If your community does not sponsor children's camps, either get a copy of the American Camping Magazine or write to the American Camping Association (343 Dearborn St., Chicago, Ill.) for catalogues of several different types of camps. Discuss the programs of these camps for adequate fit to the ages and backgrounds of the children served. Discuss any experiences you have had with children's camps.

SELECTED READINGS

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Co., 1963. Chapter Two, The Home and Family as Background for Growth and Development. Chapter Twelve, Philosophy of Adult-Child Relationships.

Crow, L. D., and Crow, A.: Readings in Child and Adolescent Psychology. New York, David McKay Co., Inc., 1961. Chapter XIV (82), How Can the Home Help a Child Make a Good School Adjustment, by Hazel F. Gabbard.

Langdon, G., and Stout, I. W.: Helping Parents Understand Their Child's School: A Handbook for Teachers. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1957.

Nemir, A.: The School Health Program. Philadelphia, W. B. Saunders Co., 1959.

Sears, R. R., Maccoby, E. E., and Levin, H.: Patterns of Child Rearing. New York, Harper & Bros., 1957.

Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958. Selections 11, Effects of Child Rearing Patterns on Mental Health; 14, Personality Development in the Family; and 15, The Child's Perception of the Parent.

EFFECT OF THE CULTURE

As subtle as the influence of the home, and as ever-present, is the influence of the culture in which the child lives. Bossard (1960) defines the culture in simple terms as "the sum total of the ways of doing and thinking, past and present, of a social group. From the standpoint of the child, culture is the social heritage to which he is born and in which he is reared." Lewis (1961) refers to the term culture as implying, essentially, a design for living which is passed down from generation to generation. Human culture is made up both of conscious and unconscious elements—the latter being the so-called implicit or covert culture that tends to be taken for granted as natural and is not appreciated until broken. It is shared with other people (Berelson and Steiner, 1964).

As a Hindu, a Chinese, a Frenchman, a New Englander, a Western white, or an Indian, certain expectations and patterns of what one does or does not do surround one from birth. These expectations and patterns may take the form of modifications of the physical form, like binding of a girl's feet in the older Chinese culture, or stretching the neck in certain African tribes. In the average American group it consists of a certain athletic development for boys with emphasis upon height and musculature and a certain emphasis upon feminine curves for girls. The short, undermuscled boy

feels the impact of his undesirability as does the lanky, uncurved girl.

The culture attempts also to mold habits. Five meals a day in some parts of Europe, three in the United States, certain diets for Italians, others for Frenchmen are all typical of their respective locales. In the development of specific habits and attitudes each culture has its own patterns. Our American way of life, for example, includes a regard for cleanliness, for individual property rights, for material success and industry. It also values skill in social relations, friendliness and conformity; independence, freedom from domination by others; strict regulation of sexual behavior and control of bodily urges (Martin and Stendler, 1959).

Universal Cultural Demands. Every culture makes demands upon its children in its own particular behavior systems: succorance, nurturance, self-reliance, domination, aggression, responsibility, obedience, sociability, and achievement (Whiting, B., 1963). Times, places and circumstances regarded as proper for elimination differ. As children grow older, every culture places upon them expectation of self-care in various degrees and at various ages, of participation in the life of the community, of economic independence or contribution to the group life, of marriage and child rearing.

Whiting (1963) states that training for self-reliance and the associated punishment for succorance are universal problems, but the degree to which this new behavior is expected of 3 year olds varies from one society to another. The handling of aggression against parents, siblings and peers is also a universal problem which all parents and socializers must face at this time. Too often these expectations are imposed regardless of the individual child's ability or constitutional make-up. Until the turn of the century, for example, the United States had little regard for any but the muscular, aggressive male. The contributions of thinkers, artists and other introverts were not utilized as in Europe. For this reason, much art and literature, and even much science, was lost in the welter of aggressive action which dominated the cultural expectation for boys. More than this, great unhappiness and maladjustment existed for the "misfits." Since the beginning of the acceptance of art and literature, and of scientific or scholarly pursuits, this particular loss and unhappiness has decreased.

Another cultural attitude is revealed in the following instructions for teaching first grade children to line up in an orderly fashion in Russia: "The following conditions should be present: (1) Motive for mastering the type of behavior desired; (2) proper organization of the children's activity; (3) instruction to the children to properly relate the corresponding behavior elements with the time interval allotted to them. . . . Only by meeting the above requirements in the study was it possible to stabilize and then to organize the behavior" (Prokina, 1960).

In Finland in 1962 the most frequently mentioned daily cultural activities of children were listening to radio, reading books, participating in sports (boys), reading newspapers and watching television (Jurovsky, 1962).

Italian youth of secondary school age (a study of 742 boys and 272 girls) had, in ten years, changed most in religion, sex and family morality, some aspects of social morality and attitudes. The 1962 attitudes were: more sincerity, more precocious earnestness and maturity, a more serene attitude, but also a loss of youthful idealism and an emphasized individualistic "realism" (Grasso, 1962). Many contemporary American young people may feel that this study might well have been

done in the United States, with comparable results.

Cultural Demands in the United States. Within the framework of our characteristic "American" culture in the United States, we find that the demands of the social group upon the child vary from the family to the gang (the standards of the gang often coming into conflict with those of the family), and from the gang to the standards of boy-girl or other behavior in adolescents. Children learn one pattern of behavior and one set of standards for moral and ethical beliefs in the home. These must be adjusted later to those of the peer group and neighborhood; and these, in turn, must be worked out to fit the demands of intimate, personal relationships in adolescence.

Even within the family, the child finds that he must adjust to differing standards as he grows, since one type of behavior will be expected at one age, another at a later age. For example, nearly every infant, whether he was wanted before his birth or not, is soon loved by his parents. He experiences a period when he is the adored center of, at least, his mother's universe. At 18 months to 2 years he becomes "the run-about child," getting under foot when his mother works, getting into everything, asserting his own ego in temper tantrums. He experiences a period when discipline, frustrations and restrictions are inevitable, a period when even the calmest adult occasionally finds himself on edge. Ordinarily, there will be many periods still when the child is thought "cute" and receives admiration and affection, but the conflict of being in the way and of being adored in turn is present for most children. This is heightened if a new baby is on the way or already present, in which case the child may experience a strong feeling of being in the way and a nuisance in the household. Relief from this feeling comes when he is out-of-doors and hence no longer underfoot. This is not destructive in his growth, since to be too much adored in the family circle sometimes means that the child cannot leave it; to be somewhat unwanted, at least at times, gives one the courage to seek satisfaction elsewhere.

Upon entrance to school, a number of things may happen. If the child is quick to smile, to obey orders and to learn school routines, he often experiences a renewal of mothering affection from his kindergarten or first grade teacher. If he is troublesome to have in a group of children, slow to fit into routine and not particularly lovable, he may exact rebuke and a further sense of isolation from the adult world. In any case, the majority of children do not stay entirely lovable in the eyes of most teachers very long. The result is often scoldings from teacher and principal, rebukes from neighbors and sometimes even from the police, warnings from the parents to keep out of trouble. Some children, in spite of competition with other children in the family for a place in the sun, continue to enjoy through all of this a secure affection from their parents and, hence, find conflicts with the world not too unbearable. Others, failing to feel confidence in their place in the family, find "belongingness" only in the approval of the peer group. This may lead to a bid for status in a gang either on the basis of bravado and malicious mischief or on the basis of constructive accomplishments as a good ball player or a champion model-airplane builder. The good of society and the mental health of the child lead us to hope he will make the latter rather than the former adjustment.

In any case, he reaches adolescence. Here he almost inevitably goes through a period of ridicule from adults for his awkwardness; he is expected to be grown up in judgment

and behavior, yet is denied what, in his eyes at least, look like grown-up privileges of independence from supervision. Parents and teachers make gestures toward control which sometimes take on the aspect of desperate attempts to teach all the lessons of self-control and good judgment which the adults fear were not learned earlier. Conflict with adult authority is often even more acute than it was between 2 to 4 years. However, the young person may be able to save face with the adults if he gets good enough school grades or is prominent enough in school activities, especially if the activity is football. There is a diminishing group of parents with whom the most effective "face-saver" is getting a job and paying board at home. Meanwhile, the adolescent's own inner urges take him into the realm of socializing, shopping-for-mate activities which often conflict with the activities which serve as good "face-savers" with the adults.

Mead says that "American children are growing up within the most rapidly changing culture of which we have any record in the world, within a culture where for several generations, each generation's experience has differed sharply from the last, and in which the experience of the youngest child in a large family will be extraordinarily different from that of the first born. . . . So long-standing and so rapid have been these processes of change that expectation of change and anxiety about change have been built into our character as a people. Our homes have become launching platforms from which our children set out on uncharted seas, and we have become correspondingly more anxious that they should be perfectly equipped before they go" (Midcentury White House Conference, 1951).

It seems clear that, within the family or in the school and community, the child's behavior and attitudes, standards and beliefs are constantly being molded in directions dictated by the particular culture in which he grows up. Let us examine further some of the specific influences in the community that mold his growth as a community member.

RACE

Race Defined. Krogman (1961) comments on race as follows: "There is a major premise to be accepted at once: all people now living, or who have lived for the past 100,000 years or so, belong to the same genus, *Homo*, and to the same species, *sapiens*. To make identity even more graphic, it may be observed that 29,500 pairs of the 30,000 pairs of human genes are shared equally by all of Mankind. It is the remaining 500, withdrawn differentially from the common gene pool, that set up so-called 'racial differences'—those external hallmarks of skin, hair, nose that grant measures of unlikeness. In the broadest possible terms there is but one 'human race'."

At present, there is no available scientific evidence for believing that races differ in their innate capacity for intellectual and emotional development.

Race Comparisons. Many comparisons of Negro and white groups have been made in the United States. In study after study in various parts of the United States and Canada, when standardized intelligence or achievement tests are given groups of Negro and white children or adults, the average for the white group is significantly higher than the average for the Negro group. Individuals in each group differ from other members of their own group over a wide range. There are many and varied factors which determine these results (Tyler, 1963). These differences between the races and

within them are best explained in terms of social and educational environment. Such differences tend to disappear when environmental opportunities of different racial or ethnic groups become similar (Knoblock and Pasamanick, 1960). Values and goals of Negro and white youth, their evaluations of religious, social, theoretical, political, esthetic and economic goals tend to become the same (Lott and Lott, 1963). Studies of the differences in development among races have indicated the difficulty of attributing these differences solely to race because of the involvement of environmental circumstances.

In the physical areas differences in size, skeletal maturation and sexual maturation, as indicated by the menarche, have been noted among different racial groups, as we shall see in Chapter 7. Japanese children in Japan tend to be smaller than American-born Japanese children, but when Japanese children are reared in the United States they tend to be taller than Japanese children reared in Japan. The Japanese children reared in Japan have been found to be taller for age in 1953 than were children in 1900.

Negro children in the United States show no marked difference in skeletal or sexual maturation from white children, when socioeconomic conditions are similar to those of white children. Healthy infants in Uganda have been found to conform in their skeletal maturation to American standards of reference (Greulick, 1957, 1959).

Psychological differences among racial groups have a strong environmental component. Intellectual and temperament differences are discussed by Klineberg who is quoted by Carothers (1953) as saying: "The net result of all the research that has been conducted in this field is that there is no scientific proof of innate racial differences in intelligence; that the obtained differences in test results are best explained in terms of factors in the social and educational environment; that as the environmental opportunities of different racial or ethnic groups become more similar, the observed differences in test results also tend to disappear. When tests of temperament or personality are used, the same considerations apply."

Racial bias, on the other hand, can influence personality development both in the prejudiced and in the victim. This viewpoint has been corroborated by Kennedy et al. (1963).

SOCIOECONOMIC STATUS

Children grow up in different social classes, which have economic, social and cultural components and which are determinants of where they live. Sociologists classify social classes in the United States into three major groups with subclasses in each. Thus people are said to be classified as lower, middle or upper class. These classes cut across color, ethnic and religious lines, are more apparent in some regions than in others, and interact in varying degrees so that overlapping and diffusion occur.

The development of the child, physical, mental, social and emotional, can be viewed from the perspective of these various aspects of his environment.

Effect on Physical Health and Growth. Socioeconomic status determines to a large degree the paucity or abundance of those conditions which are conducive to healthful living. In 1950 the average Negro family income was $1519 less than that of the average white family; in 1961 it had become $2662 less than the $5981 average for white families. Sixty per cent of the Negro families earned less than $4000 per year. This, it must be recalled,

includes many rural areas where income is supplemented by food produced by the families (Lyford, 1963).

Many studies in the past have pointed to the fact that material well-being affects physical development. Investigators have accumulated evidence by comparing private and public school children, by grouping children according to the family income, according to the occupation of the parents, or the type of neighborhood in which they live. Still other investigators have studied the effect of changing the environment. Karpinos (1958) found differences in height and weight between selective service registrants of differing socioeconomic status. Using several studies, Meredith (1951) concluded that white boys of the professional and major managerial classes are taller and heavier than those of the unskilled and semiskilled classes. The difference between the two classes averaged one inch in height and three pounds in weight. As Meredith states, the explanation of differences in height and weight between different socioeconomic groups is not known, but diet, housing conditions, health practices, occupational demands and selective mating are possible contributing factors. Sexual maturing as indicated by menarche occurs earlier in better than in poorer socioeconomic levels.

The effect of environment upon the health of children is not always easy to determine since illnesses during childhood are predominantly acute infectious diseases and acute respiratory diseases which affect both rich and poor. It is the chronic diseases which come later in adulthood (they may have some of their roots in the growing years) which show a class differential, with a higher incidence in the poorest groups of the population. Fiedler (1951), in a study of young public school children with hearing defects, found that the great majority of them were underprivileged children. Poverty is one of the basic causes of malnutrition, as is borne out by the Spies studies that were mentioned in Chapter 4.

We must realize, of course, that the poor physical condition of low income children springs from more than their lack of proper food, shelter and medical care. Several factors may contribute. Some of the parents of these children are themselves suffering from long-term malnutrition and chronic disease and therefore lack the vigor and ambition necessary to improve their condition. Some are the not-quite-normal intellects of the population whose low intelligence prevents them from raising their economic status and from understanding the needs of their children and providing for them. Some are the victims of social and economic forces. In many instances the contributing factors are multiple. The poor physical condition of children in low income families may, therefore, be due to a complex of hereditary, nutritional and social factors.

Housing and Health. Housing is one of the indices of the economic status of a family. Bad housing is a symptom of low economic status and usually does not exist alone. It is frequently accompanied by inadequate food, insufficient medical care and crowding. Because housing is part of a constellation of economic and social factors, it is difficult to say that bad housing, per se, produces retardation in growth or conditions which make it difficult for the child to develop. However, poor housing means poor chances for children, as shown by a comparison of four slum areas and four good areas in Chicago. In comparison with the good areas, as we see in Figure 33, the poor areas had twenty times as much juvenile delinquency,

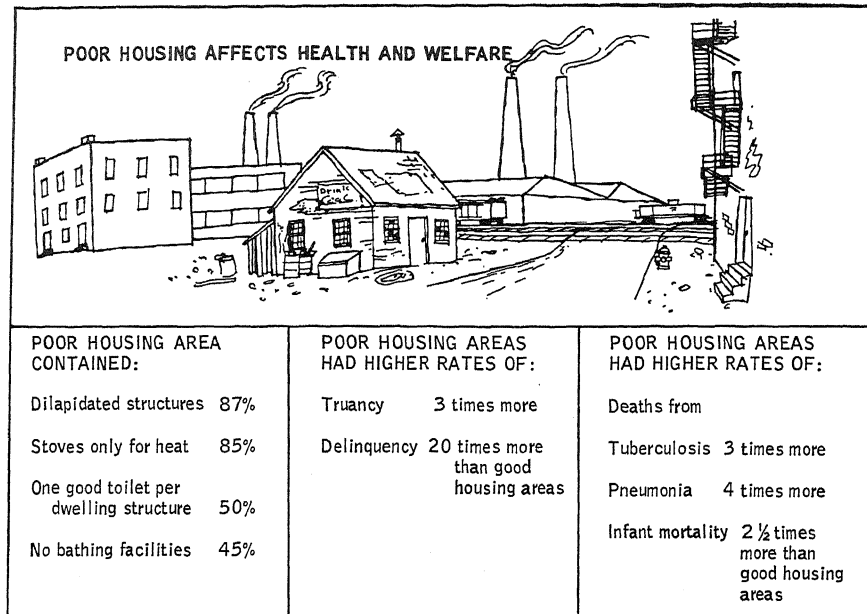



FIGURE 33. From Chicago Housing Authority. Midcentury White House Conference on Children and Youth, 1950, Chart 28.

three times as many deaths from tuberculosis, four times as many deaths from pneumonia, three times the amount of truancy and two and one-half times as many infant deaths. Fuerst and Kaplan (1951) describe one slum area in Chicago: "Rats, mice, roaches and other kinds of vermin infest more than half the buildings; stoves and makeshift arrangements are the only means of heating for nearly 85 per cent; almost seven-eighths of the individual flats are dilapidated or are in dilapidated structures; a little less than half the houses lack bathing facilities; toilets in good condition amount to less than one per dwelling for every other building." Such houses are breeding places for disease and accidents and are barriers to good habits of eating, sleeping and elimination. They are frustrating to parents who want a better life for themselves and their children. Many children live in conditions not quite so bad but still not adequate for a good life. For instance, in an environmental and sociological study of rheumatic heart disease in two different types of communities in Connecticut, factory and residential, crowding in the home seemed to be a factor associated with the disease (Quinn, 1950).

Poor housing with its poor facilities, crowding and poor environment makes the establishing of good health habits very difficult, if not, in some instances, impossible. Poor toilet facilities may interfere with regular elimination. A quiet, pleasant atmosphere at mealtime may be prevented by the hurry, noise and confusion that result from too many people in too small a space. There is little space for play. Children frequently must sleep together in poorly ventilated rooms. Such children develop fatigue which is increased by the noise and confusion and the inadequacies of diet. Under such conditions it would be a

rare child who could get up in the morning feeling refreshed and ready for the day's activities.

The basic principles of healthful housing may be grouped under three broad headings: (1) meeting the physiological and psychological needs of the individual, (2) protection against contagion, (3) protection against accidents. Meeting physiological needs involves temperature regulation, ventilation, light, protection against excessive noise, and provision of adequate space for exercise and for children's play. Meeting the psychological needs involves adequate privacy for the various members of the family, opportunities for normal family life, facilities for doing the household tasks without undue physical and mental fatigue, opportunities for normal community life, facilities for maintaining the cleanliness of the house and the family, and living in accordance with the prevailing social standards of the local community. Protection against contagion involves safe and adequate water supply, adequate toilet and sewage facilities, absence of vermin, sanitary conditions in the vicinity, provision of facilities for keeping milk and food fresh, and provision of sufficient space in sleeping rooms to minimize the danger of infection by contact. Protection against accidents includes a safe dwelling, elimination of fire hazards, protection against the danger of electrical shocks or burns, protection against falls or other mechanical injuries, and protection of the neighborhood against automobile traffic hazards.

Effect on Emotional and Social Development. There are many factors in socioeconomic status that affect children's emotions and attitudes. Crowded, dilapidated homes, inadequate clothing and other evidences of "inferior" status leave certain marks on children. They cannot have the sense of personal adequacy which comes from the feeling that one can be proud of one's home, that one's clothes are as good as those of others, that one's father is a "success." They cannot, especially in adolescence, feel "equal" to asking any girl they choose for a date, or to asking any boy in the class to "come home and meet my family." False standards of snobbish overvaluation of material things is not involved here. Children from modest homes can and should be proud of the real values of such homes. But to be conspicuous for the holes in one's clothes or because one cannot produce a dime for morning milk leaves a deep mark on any child's feelings of self-sufficiency. Davis says in the Proceedings of the Midcentury White House Conference on Children and Youth that when a family has known stress from hunger, cold and inadequate shelter they often react with a learned fear of deprivation which colors family reaction thereafter. In some families, for example, it leads to pressure upon the children for early and rapid attainment and for conscientious work habits.

When the home is one in which the standard of living is low because of inadequate family income, we speak of such a home as "impoverished"—the family lives in poverty. Lewis (1961), in his study of Mexican families, speaks of economic traits which characterize the culture of poverty: "The constant struggle for survival, unemployment and underemployment, low wages, a miscellany of unskilled occupations, child labor, the absence of savings, a chronic shortage of cash, the absence of food reserves in the home, the pattern of frequent buying of small quantities of food many times a day as the need arises, the pawning of personal goods, borrowing from local money lenders at usurious rates of interest, spontaneous

informal credit devices (tandas) organized by neighbors, and the use of second-hand clothing and furniture.

"Some of the social and psychological characteristics include living in crowded quarters, a lack of privacy, gregariousness, a high incidence of alcoholism, frequent resort to violence in the settlement of quarrels, frequent use of physical violence in the training of children, wife beating, early initiation into sex, free unions or consensual marriages, a relatively high incidence of abandonment of mothers of children, a trend toward mother-centered familes and a much greater knowledge of maternal relatives. . . . Other traits include a strong present time orientation with relatively little ability to defer gratification and plan for the future, a sense of resignation and fatalism based upon the realities of their difficult life situation."

Lewis is a sociologist with wide experience in several countries. He observes that over a billion people in seventy-five nations of Asia, Africa, Latin America and the Near East have incomes of less than the equivalent of $200 per year, as compared with over $2000 a year in the United States.

On the other hand, there are certain pressures upon the more privileged children. Middle and upper class children are subject from early childhood to pressure for success in life and for social acceptance by "the right people." Hence, they come to fear failure, not only in the accomplishment of long-range "life" goals but also in the accomplishment of immediate goals. The underprivileged child, as a rule, has no such expectation of success, hence little of the same kind of fear of failure. Especially in school, success is demanded of children in quite different proportions, depending upon family status in the community. Middle and upper class parents put constant pressure upon their children for school success, whereas the lower class parent more readily accepts special classification in retarded classes, quitting at the end of the eighth grade, and so forth.

COMMUNITY ENVIRONMENTS

Children grow up in different kinds of community environments. They live in cities, in suburbia, in exurbia, in towns not adjacent to cities, in rural areas. They live in good environments and poor. In cities they live in multiple dwellings, in housing projects, in separate houses – some small, some large, some poor, some good. They live in crowded areas, where the only space for play is the streets; they live in planned areas with ample provisons for recreation. They live in homogeneous communities and in heterogeneous communities, in segregated and nonsegregated areas, in areas with differing traditional backgrounds. Some, the children of migrants, are wanderers with no permanent roots. The child's neighborhood environment is one of the determinants of his development (Otterstaedt, 1962).

The Strain of Urban Life. One of the contrasts in type of environment in which children live is that between urban and rural.

In 1950 about 57 per cent of the United States population lived in 168 metropolitan areas (cities of 50,000 plus). From 1900 to 1950 such areas absorbed 73 per cent of total population growth; in the last decade of this period the percentage rose to 81. By 1975 we shall have 200 such metropolitan areas. Every time we build a mile of superhighway we lose forty acres of land (Krogman, 1961).

It would seem reasonable to assume that cities, roughly in proportion to their size, represent the antithesis of rural conditions. Whereas the country is typified by wider living spaces, the city is crowded; in the country the

family is a center of many activities; in cities public and private organizations of many kinds at least partially supplant functions of the family. In cities contacts with humanity supersede contacts with nature, and children miss many experiences (Fig. 34). Differentiation of economic classes and specialization of economic tasks which rank and grade men are prominent, with resulting disparities of opportunity and their accompaniment of competitive living. The complexities and competitions of city life produce nervous strain of a type not usual under rural conditions.

If the living background is a slum, there is a minimum range of stimulation and of opportunity to manipulate objects, or to experiment with them in an orderly manner. Restriction in the range of the variety of input limits the output in expression and reduces the precision and the ability to perceive relationships or other abstract qualities, such as size, shape, distance, and time (Deutch, 1962).

Merrill and Eldredge (1952) point out three ways in which the family tends to differ in the urban and rural community: namely, differences in fertility (more children in rural families); differences in the gainful employment of women (more urban women work away from home); and differences in family stability (higher divorce rate in urban areas).

City and Country Advantages to Growth. The country, rich with open spaces for imaginative play and with nature lore, domestic animals and chores to do, offers a type of physical

FIGURE 34. City children discover where milk comes from. (Courtesy Los Angeles Public Schools.)

exercise and of character-forming opportunities not to be found in larger cities. City parents envy rural parents these environmental factors. On the other hand, rural parents envy city parents their libraries, art museums, lecture series, theaters, concerts, schools, music conservatories and markets for buying food, clothing and other necessities. The urban teacher wishes for the nature lore of the country as a background for biology, botany, etc. The rural teacher envies his city colleague the same educational facilities which the rural parent envies the urban parent.

Burchinal (1963) says that thirteen million young people between 15 and 19 years of age in the United States today are members of a highly urbanized society which has seen rapid and far-reaching technological and social changes. One-third of these thirteen million now live in rural areas—on farms, elsewhere in the open country, or in villages of less than 2500 people. He says that many young people now living in rural areas will pursue their adult careers in urban communities, since the rural labor market has more people than jobs. A difficulty that will meet these young rural people is that urban areas no longer need nor can absorb masses of unskilled workers. There is reason to believe that, in comparison with urban youth, rural youth are at a disadvantage in competition for employment. Part of this disadvantage is that rural youth have grown up, as a rule, with a set of values in which physical strength, informal training and being one's own boss are predominant. This ill prepares them for work in a society dominated by large-scale organizations with highly specialized work roles. Transition from rural to urban areas is particularly difficult for the six million rural youth 15 to 19 years old in the United States who in 1960 were living in the South. One million of these were Negro, which connotes a regional and racial handicap as well as a rural one.

Burchinal, in discussing the backgrounds of rural youth in comparison with urban youth, lists the following points as relevant: Parents of rural youth on the whole have lower levels of education. Rural families have lower incomes. The quality of rural education still lags behind that in urban centers. Rural youth are less likely to continue education beyond high school.

Hathaway (1959) found that rural youth in Minnesota expressed greater feelings of shyness, self-depreciation, and suspicion than did urban youth. Haller (1962) found that urban boys scored high on dominance, aggressiveness and self-sufficiency. These findings may suggest that personality characteristics along with the differences in education conspire to handicap rural youth in urban competition for jobs and promotions.

The above studies reinforce the thesis that rural and urban environments exert definite, differential influences on youth.

Advantages of Suburban Living. Until the 1950's differences between rural and urban children were evident in intelligence ratings and certain personality characteristics. This is no longer true. Burchinal et al., in 1957, found no significant differences between rural and urban children in Iowa, Kansas, Ohio and Wisconsin. The authors suggest that the rural-urban dichotomy is ceasing to be a valid one. Although there are still many children growing up in remote rural areas in the United States, and countless millions doing so in many countries of the world, the widespread use of automobiles, vastly improved road conditions, the rapid establishment of local hospitals and medical centers, and of fine consolidated schools, along with almost universal coverage by radio and television, have

gangster or other crime pictures which served as a pattern for their own delinquencies. In a set of experiments designed to study the effect of exposure to symbolic aggression, as seen in motion pictures, upon the play behavior of children, Lövaas (1961) found an increase of aggression in children's play and as revealed in doll play. More will be said under TV about the association between mass media and delinquency.

We may conclude that children tend to react emotionally, physically and morally to movies. As they become older, with changing interests, widening experience and somewhat less "realistic" reactions, their emotional and physiological responses are somewhat less intense. However, it is clear that too frequent attendance at movies may prove far too stimulating to a nervous or high-strung child. If such a child attends movies at all, there should be definite restriction on the type of movie he is allowed to see.

Movies in Education. There is little question that sound movies, appealing as they do to the ear as well as to the eye, are a dynamic force in education wherever they are used. The multitude of educational movies now available and in use at all levels of formal and informal education is evidence of their possibility for positive benefit. Many universities now operate studios for the production of educational movies in nearly all possible subject-matter areas. Few modern elementary or secondary schools now lack projectors and access to extensive educational film libraries. Almost no college or university fails to use movies extensively in at least some of the subject-matter divisions. Few adult education programs would think of operating without movies and other visual aids. It must be remembered, however, that in spite of all that is being done with educational movies, children still spend considerably more time listening to the radio, viewing television at home and attending commercial movies than they do on classroom radio, television and movies.

RADIO AND TELEVISION

Radio. Radio, as an important influence in the development of children, began to command much time and attention in the late 1920's and influenced an increasing number of children until the advent of television in the late 1940's. Levenson and Stasheff (1952) report that in 1952 there were operating in the United States more than 2700 radio stations, and that realistic business men spent over $400,000,000 yearly for the use of radio time to sell products. There was in the United States at that time an average of one radio set for every two persons. Since 1952 television has achieved almost universal coverage of the United States, but most families appear to have retained small radios for listening when TV viewing is not convenient, and especially for coverage of the many FM programs of classical music. Car radios are also popular.

Farnsworth, at a Hogg Foundation Conference in 1960, said that: "With the advent of the transistor radio, we'll never again have to walk alone." One wag has said that "instead of living lives of quiet desperation, we now live lives of noisy desperation."

EFFECT OF RADIO. There were many studies in the 1930's and 1940's on the extent and effect of radio listening on children. They showed an average listening time of one and one-half to three hours a day, which is somewhat less than the time now spent in viewing television. They found that most of the listening was done in the late afternoon and early evening, although many children

listened far beyond these hours. This is now true of TV. They showed that children's listening was limited neither to the "children's hours" nor to the children's programs but ranged over the available programs. This is also true of TV. They showed that exciting stories were especially attractive to children, programs devoted to adventure and crime being specially favored. This is now true of TV, as indicated by the preponderance of old and new "Westerns" in TV programs. Certain comedians on adult radio programs were as popular with children as they now are on TV. Classical music was one-third as popular as semi-classical and one-fifth as popular with the junior and senior high school audience as the so-called popular music. As adolescents grew toward the last year of high school they listened to increasing amounts of current events and informational broadcasting. We can assume that these facts, excepting for amount of time, are still true of radio listening.

Few writers deny that radio and television have a profound effect upon the attitudes, taste, feelings and buying habits of children, the effect being evidenced by the continuous appeal of advertisers to children. There are studies, however, which point out that, although some fears seem traceable to the radio, the number of fears so stimulated seems small compared to the sources of fear elsewhere in the child's life (Jersild, 1960). Children seem to become hardened with age to the shock devices used on the radio to arouse suspense and create excitement, although certain children react badly. Clinicians occasionally recognize tensions and nervous habits which are aggravated by certain radio programs (Witty, 1952).

Television. Television's first important year in the United States was 1946, when there were 10,000 receivers. By 1948 there were 100,000. In 1962, 49,000,000 households had TV. One of seven homes had two or more sets—a total of 56,000,000 receivers. There are more homes with TV than with telephones, automobiles, bathtubs or refrigerators. "Long before the young child can walk or talk there is some subtle contact with this electronic box that beams sight and sound simultaneously. . . . It is very likely that during these formative years, television is conveying some familiarity with and expectations of the culture" (Appell, 1963).

N. R. Minow, Chairman of the Federal Communications Commission (in 1962), has suggested that television has become an "educational fourth force to be ranked along with the home, school and church as one of the powerful influences that help shape our children's hopes, fears, tastes, and ambitions."

The child's exposure to TV is sometimes direct and early, as his mother or the baby sitter pushes his bassinet in front of the television to keep him amused. This is more likely to happen in families where the parents have had little more than grade school education, hold blue collar jobs, and cannot afford baby sitters (Schramm et al., 1961). In any case, the infant is attracted to the TV when other members of the family are viewing it.

In most homes, Schramm found, the child is viewing specific television programs before he hears stories read to him and, certainly, before he is capable of reading to himself. In a comprehensive study of the United States, Schramm and his coworkers found that the average 3 year old viewed about 45 minutes per day, which is more time than he spends listening to stories. By the age of 4 the viewing time averages 1½ hours per day. At age 5 the average was somewhat more than 2 hours per day. Starting at age 3, Schramm found, about one-sixth of the child's waking time

is spent viewing television. Every day in America children under 12 spend some seventy million hours as television viewers. It is evident, then, that television is one of the greatest sources of common experience in the lives of children, along with the home and, later, the school. In total, the time children spend with TV exceeds the total time they spend with all other mass media combined and, over the calendar year, is more than they spend in school (Hess and Goldman, 1962).

The under 6 year olds remember which programs appear at certain times of day even before they can tell time by the clock. Through a process of sibling identification and imitation, suggestions by peers and parents, favorite programs are developed. Clara Appell (1959), in an exploration of television impact upon middle class family life, found that parents have at different times given the following reasons for valuing TV viewing: "It gets the children out from under foot. . . . It keeps them out of trouble. . . . It keeps them interested when they are alone indoors. . . . I can get my chores done. . . . I know where they are and it is peaceful."

Wann et al. (1962) found that today's young children have a vast fund of experience and information, in contrast to the children of even a few years ago. They credit much of this information to the television experiences by which children travel below ice fields at the North Pole and rocket into space, as well as travel extensively on a more local basis.

Apparently TV took some "getting used to," since studies show that parental attitudes toward the medium and children's reactions have changed somewhat as TV has become more universal and the novelty has diminished. In the early 1950's parents reported that TV strained children's eyes, caused them to sleep less, and generated more nervous problems than had existed prior to TV (Witty, 1958). Children who have grown up with TV in the home seem to take it more casually than do those who have had it introduced after they are old enough to feel it as something unusual and exciting. More recent investigations indicate that elementary school children get about as much sleep as children did before the advent of television. The National Society for the Prevention of Blindness has stated that television does not usually affect children's eyes adversely if the rules of proper seating (not on the floor immediately in front of the screen, clear focussing of the set, and proper lighting in the room) are observed.

Educators and child specialists have long been urging parents to take a decisive role in directing and guiding children's exposure to movies, radio, comics and TV. There is evidence that parents are doing this with some degree of effectiveness (Witty, 1958). Some parents, for example, are permitting late TV shows only on Friday and Saturday nights and rule that homework must be done before TV can be watched any night. In some homes TV is forbidden until just before supper and only after outdoor play. More parents and teachers are currently accepting televiewing as part of our design of living. Parents are increasingly setting up schedules for TV, with selection of certain programs, sometimes by family agreement, and certain hours which allow for other interests and activities in the week's schedule.

POSITIVE EFFECTS. Earlier reports on the effect of TV emphasized its competition with reading interests. However, the New York City Library reported (1958) that since the advent of TV there has been an increased use of good library materials at all ages. Witty, at Northwestern University, has closely followed the expansion and effect of TV. In 1958 he reported that many children read more since the

widespread use of TV because of interests awakened by that medium and that they have enlarged their vocabularies by listening. Bennett Cerf, in an article titled "Books Are Here to Stay" (1960), says that in 1947 nearly 57 million juvenile books were sold in the United States; in 1957 close to 270 million were sold. He adds, "The sale of worthwhile juveniles, in fact, has increased so much since the advent of TV that today it is the mainstay of some of the country's most famous publishing houses."

Meyer (1957) reported that not only radio and television but other mass media as well have precipitated an interest in reading. Many teachers are recognizing this and are using newspapers, magazines and commercial films as well as educational films, radio and television for assignments which are then discussed in class.

Since television and radio do not necessarily require reading capacity, they reach even illiterate slum dwellers who can thus pick up advanced ideas and terminology (Lewis, 1961).

EDUCATIONAL TELEVISION. There is a lively controversy about the usefulness of educational television, both for broadcasting to the general public and for specific teaching in classrooms (Stanford Institute for Communication Research, 1962). In less than ten years educational television has reached a point where more than sixty broadcasting stations are on the air, serving schools by day and homes by night. Some two to three hundred closed-circuit television systems have been installed by local public schools, school districts, colleges and universities for direct systematic instruction and to share superior teaching and educational resources. In cities where educational stations are operating it is estimated that one out of every four adults is a regular viewer.

Increasingly, such systems are making high school and college curricula available to the students who can learn in their own homes under local registration and credit-granting plans connected with a degree-granting institution in the local area.

The ETV (Stanford University, 1962) report discusses how TV can contribute most to education. It says that "there are some teaching acts it can do superlatively well." For example, it can let a large number of students look into a microscope at the same time, or watch surgical procedures from close at hand. It can let a class watch procedures or activities that would be spoiled by direct observation; it can share great teaching and great demonstrations. But it cannot conduct a seminar discussion efficiently, nor can it give specific and direct personal help. The well-planned television teaching program "can motivate students, guide and sharpen their reading by providing background and demonstrations, encourage responsibility for independent learning, arouse curiosity, and develop new insights and the excitement of discovery."

This ETV report is sure enough of the merits of ETV teaching that it predicts that by 1972 the number of ETV stations will be doubled at an additional capital cost of about thirty millions, and additional operating costs of another fifteen millions. It emphasizes (in 1962) the imperative need for the development of teachers expert in the use of television and other new media in their classrooms. It points out the need to reserve future "open-circuit" educational television channels for the use of educational programs, and the need for schools and school administrators to design school buildings and to plan equipment and facilities to provide for the planning, installation, and future use of educational television and other new media.

As in the use of teaching machines, the most unfavorable reaction toward this type of instruction is the lack of free intercommunication between teachers and students. Since highly skilled teachers are selected for TV teaching, one of the chief advantages is exposure to high quality teaching (Neidt and French, 1962).

Under the Educational Television Facilities Act of 1962 (legislation designed to foster broadened and better television facilities for schools), the first five grants amounting to $858,152 were made. The object of this federal program is to provide educational television service to areas serving over a million people (U.S. Dept. H.E.W., 1963).

Negative Effects of Radio and Television. A Newsweek article called "Dial Anything for Murder" (Oct. 13, 1958) says that some producers of violence programs say they throw in violence to attract audiences to get higher ratings for advertising. The executive vice president of the Institute for Motivational Research is quoted in this article as saying: "The Institute has discovered that the audiences for violence and horror have above-average tension levels." Opinions differ as to the direct or indirect effect of these programs on delinquency and adult crime. Television appears to have a greater impact than do the other mass media. A Senate Sub-Committee (1956) investigated the relationship between juvenile delinquency and TV crime and violence. Based upon many interviews with specialists in the field, it reported the following:

1. The well-adjusted child may well be able to tolerate the added tension acquired through viewing TV shows of a violent nature; but emotionally crippled or damaged children may have little tolerance for this added tension.
2. Scenes of crime and violence may teach techniques of crime to children.
3. Acts of crime and violence may provide both suggestions and a kind of support for the hostile child, leading him to imitate these acts in expression of his own aggression.
4. Repeated exposures to scenes of crime and violence may blunt and callous human sensitivity to, and sympathy for, human suffering and distress.

This investigation represents only one of many investigations into the effect of mass media upon delinquency. Movies, comics, radio and TV, each in its turn, have been blamed for increases in the delinquency rate. In each instance, delinquent children have been found to be spending substantially more time with the medium involved than do well-adjusted children. It was at first assumed that the medium was causing the delinquency. This proved to be false reasoning which failed to take into account the many, varied causes of delinquency which lead not only to delinquency but to the spending of more time with the various mass media than with interests of a more active and competitive nature.

Correction of Poor Programs. Public reaction to the worst of the comics and radio and TV programs has been such that the various media have developed their own censorships or codes. The Comic Magazine Association, for example, in 1954 adopted a code stating certain limitations on the presentation of crime and violence. The TV industry has adopted "The Television Code" (Head, 1956) which states that: "The education of children involves giving them a sense of the world at large. Crime, violence and sex are a part of the world they will be called upon to meet, and a certain amount of proper presentation of such is helpful in orienting the child to his social surroundings. However violence and illicit sex shall not be presented in an attractive manner, nor to an extent such as will lead a child to believe that they play a greater part in life than they do. They should

not be presented without indications of the resultant retribution and punishment. Television shall exercise care in the following areas:

In eliminating reference to kidnapping of children or threats of kidnapping.

In avoiding material which is excessively violent or would create morbid suspense, or other undesirable reactions in children.

In exercising particular restraint and care in crime or mystery episodes involving children or minors" (Head, 1956).

This code has offered some conditional optimism about the future of children's TV programs and even for some types of adult programs. Competing programs have had large enough audiences to support the assumption that enough of the right kind may in time win children away from the poor material, to some extent at least. "Disneyland," for example, had its debut in October, 1954; by 1957 it was viewed in some 40 million homes and is still (1964) immensely popular.

NEWSPAPERS AND MAGAZINES

Comics. The child's enjoyment of the sensational in movies, radio and television is reflected in his choice of reading material. How much time children spent in 1951 on "reading" as contrasted to time spent on radio was revealed by one study of Middle Western children (Wright, 1957). Children under 12 were spending only from 35 to 40 per cent as much time on reading as they did on radio. We have seen, however, that in the late 1950's children were reading more than earlier in the decade. A substantial portion of this time is spent in reading comic strips and comic books. Fortunately, in school a considerable portion of the child's school day is spent in reading of fiction and nonfiction, and this, in competition with comics, radio and TV, forms an important source of guidance for the child's behavior.

Predominant as comics are in the reading of young children, the interest begins to give way to other types of reading by 12 years of age, when the child has developed much enjoyment of magazine cartoons. One-half of the 12 year olds still read comic books, but not as avidly as earlier. By 13 interest in comic books has become slight and spasmodic. By 14 only one-fourth read comic books at all, classic comics which are of assistance with schoolwork being the favorite. The 14 year old child tends to read sports and news in the newspapers as well as the comics. By 16 there is little reading of comics by the well-adjusted child. Nearly all 16 year olds read the newspaper over-all at least once in a while and some read it thoroughly with some regularity. School programs in current events along with the radio and TV news programs stimulate a broadening interest in and use of the news in newspapers and magazines.

Boys read more comics than do girls (Witty, 1952). Most boys and girls read them more at some times and under some circumstances than others. For example, the University of Michigan Social Science Research Center, in a nation-wide study of the Girl Scout Program (1955), found that no day campers of any age were seen with comic books, and in the overnight camps only 15 per cent of the campers had any comic books on the premises. None of the Brownies (ages 7 to 10) had any or showed interest in the ones the older girls had.

EFFECTS OF COMICS. Witty (1941) has cited evidence which should serve to reassure adults about the effect of comics upon children. He studied the 10 per cent of children who read the comics most in one school and contrasted these with the 10 per cent who

read them least. He found their intelligences almost exactly comparable, the "most" group averaging 107 in I.Q., the "least" group 105. The general reading interests of the two groups were quite similar. Some of the individual children who read comics most had "rich, varied and generally commendable" reading programs.

Thorndike gave (in 1941) further reassurance about the effect of comics upon children. He studied the word content of the four most popular comics which appear monthly. Contrary to the usual idea that comics are largely pictures, he found that the actual average vocabulary count in each of these magazines was near 10,000 words. He concluded: "The child who reads a comic book once a month through the school year (and this represents a very moderate dosage) gets about as much wordage of reading as he gets from even the new fourth or fifth grade reader." Although a number of slang words were included in this wordage, the bulk of the vocabulary was straight English. Many hundreds of the words used were words which children need to encounter as they expand their reading vocabularies. He gives assurance that comics do provide a substantial amount of reading experience at about the difficulty level of upper elementary school or even junior high school reading.

Thorndike added, however, that the vocabulary of comics should not be the only matter to concern us. The content and ideas are also important. "Whether the comics provide exposure to a viciously distorted and unreal world, whether they merely provide a rather innocuous way of wasting children's time, or whether they provide a needed vicarious release for tensions and aggressions which are built up and unexpressed in the world of reality is a *vital* question. It is also a *moot* question. . . ."

Influence of Other Magazines. Magazine reading (other than comic magazines) seems to follow a different curve of interest from that found in newspaper reading, since magazine reading seems to command a somewhat more serious attention. Gesell (1956) found that 10 year olds just look through magazines or read the cartoons. By 12 most children look at magazines which parents bring into the home, some read them. Favored adult magazines from 11 years on include Life, Time, The Saturday Evening Post and The New Yorker. Many Elevens name a variety of children's magazines as their favorites. By 12 favored adult magazines include The Reader's Digest; among the children's magazines Boy's Life and Calling All Girls were mentioned frequently. By 14 years children are beginning to read the texts of adult magazines as well as looking at the pictures; they favor science, sports and movie magazines. By 16 some say they prefer magazines to books for reading matter. Girls increasingly read Seventeen and the women's magazines, boys prefer magazines on science, cars and radio.

THE TOTAL EFFECT OF MASS MEDIA

Mead (1963) has said that the contemporary American family is facing a changing situation which makes it difficult for each set of parents to give clear moral definitions to their children. The present low standards of ethical behavior in many parts of our society reflect the breakdown of parents' ability to give children clear ethical direction within a scene that has been changing too rapidly.

When TV and radio were brought into the home, Mead says, the capacity

of the parents to give moral direction was further reduced. Our children are being reared increasingly by the mass media—a situation which will mean the development of new ways for parents, teachers and citizens to take responsibility for protecting *all* of the children of the local community, the state, the nation and, ultimately, of the world.

OTHER RECREATIONAL ACTIVITIES

The spread of *children's libraries* in many cities and towns provides not only a place where children can read but books which can be taken home. *Children's museums* furnish centers for the development of educational and nature hobbies. *Settlement houses* offer clubs for underprivileged children; they often have a gymnasium and swimming pool, game rooms, crafts, hobby groups, but mainly a place in which to meet friends away from the crowded and often sordid homes as well as off the streets and away from pool halls. *Boy's clubs,* not unlike settlement houses, have made a contribution to constructive use of leisure time. *Boy Scouts* and *Girl Scouts, 4-H Clubs, Y.M.C.A.'s* and *Y.W.C.A.'s* are among some forty organizations serving youth in this capacity. In fact, this is only an enumeration of the more widely known organizations. A preliminary report to the American Youth Commission of the American Council on Education listed no fewer than 330 national nongovernmental youth-serving organizations.

Expenditures for public recreation have increased rapidly in this country from less than one million dollars in 1907 to hundreds of millions today. This looks as if the public were giving youth a great deal. And so it is; but this expenditure seems wise in the face of current city and rural conditions which have placed young people in a position where commercialized recreation, slum living and temptation to delinquency are overpowering.

EXPERIENCES TO VITALIZE CLASSWORK

1. Survey your community (either the one you are now in, or your home community) in order to learn what facilities there are for: (1) Examination and care of children's health. (2) Minimizing accidents and spread of communicable diseases. (3) Educating children in physical hygiene and good health habits. (4) Wholesome recreation outside of school hours for (*a*) young children, (*b*) preadolescents, (*c*) adolescents. (5) Provision of adequate fresh fruits and vegetables the year around at reasonable prices. (6) Locating and caring for crippled children, subnormal mental cases, especially gifted children, children with special sensory defects, epileptics, and other children needing special education and attention. (7) Control of movie programs, particularly on Saturday afternoon; control of radio and television programs, particularly between 5 and 8 o'clock in the evening. (8) Library services to children; public concerts for children; opportunities for development of interest and ability in art; and the development of other interests and abilities which enrich living by providing constructive use of leisure time. (9) Detection, correction and prevention of delinquency.
2. Visit a newsstand that carries comic magazines and obtain a collection of these magazines for study. Summarize these, along with the comic strips in your daily papers, listing both good and bad influences they might have upon children.
3. Listen to the radio and television programs available to your community between 5 and 8 P.M. Discuss those programs to which children might be listening for possible effect upon them.
4. Investigate the current literature (from 1960 on) for material about the effect of community factors upon child growth and development.

SELECTED READINGS

Biesanz, J., and Biesanz, M.: Society. 2nd ed. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1959.

Crow, L. D., and Crow, A.: Readings in Child

and Adolescent Psychology. New York, David McKay Co., Inc., 1961. Chapter I (11), A Cross-Cultural Study of the Reinforcement of Child Behavior, by Wayne Dennis; Chapter II (24), The School, the Peer Group, and Adolescent Development, by R. H. and Ida H. Simpson.

Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958. Selections 12, A Study of Values; 13, Childhood the Hopi Way; 18, 19, 20, Teacher-Pupil Relations; and 39, Why Do Children Watch TV?

Whiting, B. B. (ed.): Six Cultures: Studies in Child Rearing. New York, John Wiley & Sons, Inc., 1963. Introduction (pp. 1-13). Assign other chapters to different students to report to the class for coverage of Kenya, India, Okinawa, Mexico, Philippines, and New England.

We have given evidence to show the interrelation between physical and mental growth. It is the purpose of this chapter to provide information about physical development which can contribute to the understanding of the whole child.

THE NEWBORN CHILD

What the newborn child is like in behavior appears to have little predictive value for what he will be like in later life (Kessen et al., 1961). Studies of neonates at birth indicate that normal heart rate, respiration rate and temperature at birth do not preclude difficulties beginning later on (Desmond et al., 1963).

There are changes from occasion to occasion in the tension or disturbances or disequilibrium in the human newborn. He may be quietly asleep one moment and the next moment be awake and screaming; he may be slowly moving his arms and legs, and then suddenly startle. These early variations in tension come to be more and more closely related to environmental events (Kessen et al., 1961).

GROWTH IN SIZE

The Pattern of Growth in Height and Weight. The pattern of growth in height and weight is characterized by alternating periods of faster and slower growth as indicated in Figures

1 and 7 in Chapter 1. Thus, it follows the general principle that growth does not proceed at an even tempo. The first period of fast growth occurs in infancy; the second period, known as the adolescent spurt, occurs in early adolescence and is closely associated with approaching sexual maturity. It is largely under endocrine control but is subject to change of pace, depending upon such other factors as adequacy of nutrition. Tanner (1963) refers to "catch-up" periods or compensatory growth occurring in children at the ends of periods of starvation, hypothyroidism, Cushing's syndrome, and growth-hormone-responsive dwarfism. In healthy children a catch-up occurs frequently during the first 6 months after birth, genetically large but physically small babies being thus enabled to reach their growth curves after having been restrained when developing in the uterus of a small mother. A second cycle is supposed to occur at adolescence. Following this second spurt, growth slows down and, especially in height, ceases at maturity.

By the time the child reaches school age he is already in the middle period of slower growth. As shown in Figure 35, the early elementary years are characterized by decelerating growth in height. Girls at approximately 9 years begin their adolescent growth spurt which reaches a peak in the 12th or 13th year; boys begin their growth spurt around 11 years and reach their maximum gains, which are greater than those of girls, in the 14th or 15th year. However, the age of the adolescent spurt will vary somewhat from group to group. Tanner (1962) reports an age for boys from 13 to 15½ years, with maximum gain about 14 years; for girls it occurs about 2 years earlier.

Average age of maximum growth according to Shuttleworth (1951) is 12.56 years for girls and 14.8 years for boys; according to Nicholson and Hanley (1953) 11.51 and 13.77 years, respectively.

In weight (Fig. 36) the school-age child increases in momentum slowly each year until girls reach a peak at about 12 and boys at about 14 years. The peak in weight tends to lag behind

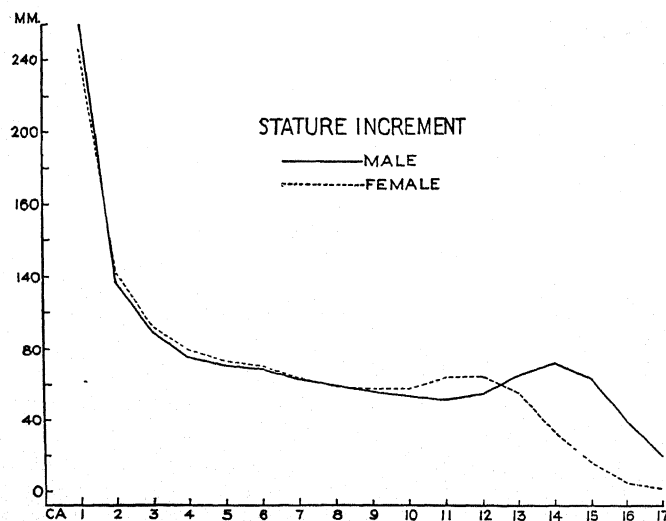



FIGURE 35. Annual mean increments for standing height for boys and girls. From Simmons, K.: The Brush Foundation Study of Child Growth and Development. II. Physical Growth and Development. Monogr. Society for Research in Child Development IX, No. 1, Society for Research in Child Development, National Research Council, Washington, D. C., 1944, p. 43.

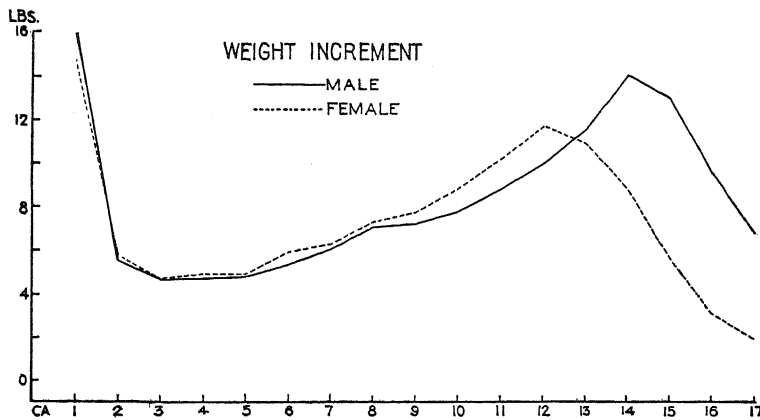



FIGURE 36. Annual mean increments for weight for boys and girls. From Simmons, K.: The Brush Foundation Study of Child Growth and Development. II. Physical Growth and Development. Monogr. Society for Research in Child Development IX, No. 1, Society for Research in Child Development, National Research Council, Washington, D. C., 1944, p. 44.

that of height by 6 months or more. Thus, many children have a brief "filling out" period after their rapid growth in height. During this adolescent spurt girls may gain seven times more weight than during their preadolescent years. Boys in one study generally gained slightly more than twice as much in height during the 2½ to 3½ year period of rapid growth as they did in the preceding and following periods covering 2 to 4 years. Stolz and Stolz (1951) divided the adolescent growth period into three sections: prepuberal, puberal and postpuberal. The puberal period is the period in which maximum growth rate occurs.

Growth in height generally ceases somewhere between 16 years and the early twenties. Growth in weight for the average adolescent probably stops in the early twenties.

As stated above, the *timing of puberal growth in height and weight is related to progress toward sexual maturation.* Indicators of this progress are growth of pubic and axillary hair, menarche (first menstruation) in girls and growth of penis and testes in boys. Studies demonstrate that children of the same chronological age who are farther advanced toward sexual maturity are taller and heavier than those who are maturing more slowly (Skyler et al., 1937). Figure 37 illustrates this difference in size that accompanies difference in degree of sexual maturity. While all three boys are 14 years of age, the one at the left is physically still a boy while the one at the right is a man. Among 14 year old boys, the postpubescents are taller and heavier than the prepubescents. The average 12 year old girl who menstruates before her thirteenth birthday is taller and heavier than the average 12 year old girl who does not menstruate until she is at least 14 years old (Stuart and Prugh, 1962). That faster growth is associated with earlier menarche is demonstrated in Figure 38. When curve A, which represents the growth in height of girls who menstruated before 11 years and 6 months is compared with curve H which represents girls who menstruated after 14 years and 5 months, it can be seen that the growth in height of girls represented by curve A is faster (steeper slope) and the period of growth is shorter than the growth in height of girls represented by curve H.

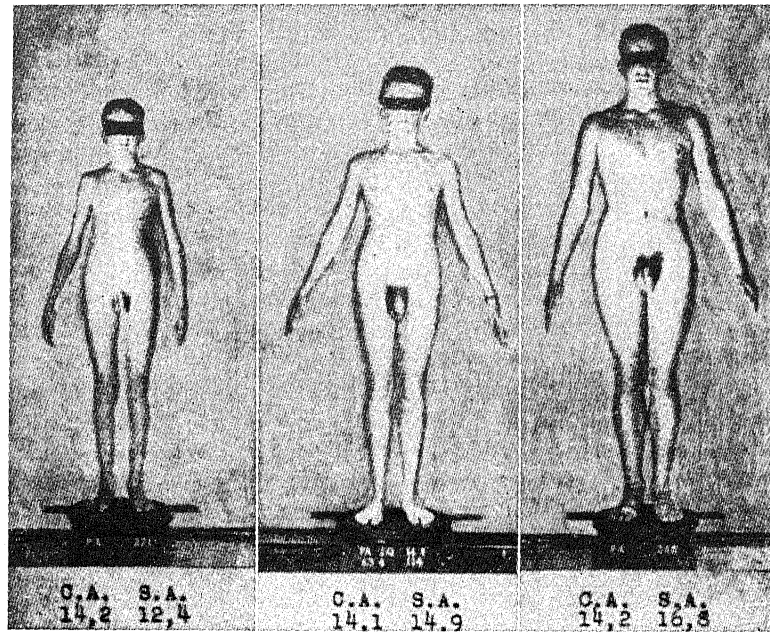



FIGURE 37. Three 14 year old boys who differ in degree of sexual maturity and size. (Greulich, W. W., et al.: Somatic and Endocrine Studies of Puberal and Adolescent Boys. Monogr. National Research Council, 1942. Wash., D. C.) C. A, chronological age; S. A., skeletal age.

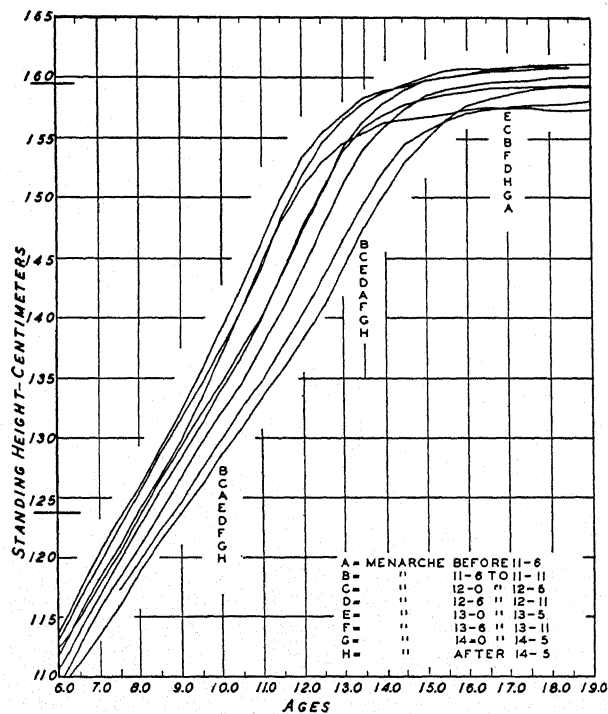



FIGURE 38. Growth trends in average standing height for each of 8 groups of cases menstruating at different ages. (Shuttleworth: Monograph Society for Research in Child Development, Vol. II, 1937, National Research Council.)

The beginning of the adolescent spurt of growth and its peak are closely timed with age of first menstruation in girls and genital development in boys (Stolz, 1951). The initiation of the period of rapid growth in height generally occurs sometime between 2½ to 3½ years before menarche and the year of most rapid growth sometime within the 2 years preceding menarche. For example, according to Shuttleworth, girls who menstruated for the first time at 11 years had their year of most rapid growth in the preceding year between their tenth and eleventh birthdays. Those who menstruated for the first time at 15 years, however, had their most intensive growth between 12½ and 13½ years. Boys, according to Stolz and Stolz (1951), have their greatest gains concurrently with increase in the size of the genitalia. Some of the later maturers show relatively little acceleration through this period.

The greatest gains in weight are also related to stages of sexual maturation. The average girl in the Shuttleworth (1939) study had her greatest gain in weight about 3 months before she began to menstruate.

This relationship between progress in sexual maturation and progress in height and weight indicates that the maturity of a child must not be disregarded when evaluating his growth.

The pattern of growth is illustrated in Figure 39. The drawings from

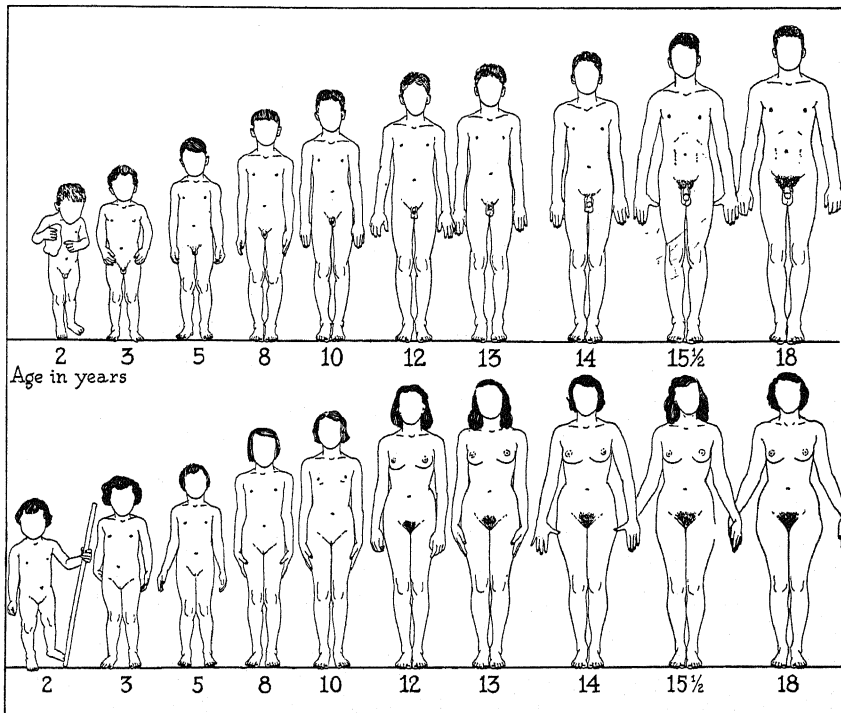



FIGURE 39. Growth of a boy and girl from 2 to 18 years. Differences in size, except for the boy at 2 years and the girl at 2 and 3 years, represent actual growth. For the boy pigmentation of pubic hair begins at 12 years; accelerated growth of the penis begins between 13 and 13.5 years. The girl's menarcheal age is 11.5 years. In physique the boy has slightly more of the mesomorphic component than the average boy; the girl's physique is average for girls. (From Berkeley Growth Study. Institute of Human Development, University of California, through the courtesy of Dr. Dorothy Eichorn. Drawings adapted from those of Ann Turner.)

photographs of a boy and a girl from 2 to 18 years of age illustrate (1) the pattern of growth in height, with the adolescent spurt coming earlier in girls; (2) sexual maturation as indicated by the development of breasts and pubic hair in the girl and the growth of testes, penis and pubic hair in the boy (again showing the earlier timing in girls); (3) the relationship between sexual maturation and growth in height; (4) changes in body proportions with age and (5) the emerging differences in body contours of boys and girls. This series can be referred to later in the discussion of body proportions and physique and the development of the reproductive system.

Progress in Height and Weight. Boys grow in height from a range of 18.6 to 21 inches at birth to a range of 65.5 to 71.8 inches at 18 years; in weight from a range of 6.3 to 9.1 pounds at birth to a range of 120 to 169 pounds at 18 years. Girls grow from a range of 18.8 to 20.4 inches and 6.2 to 8.6 pounds at birth to a range of 61.5 to 66.7 inches and 103.5 to 144.5 pounds at 18 years. These figures are taken from Stuart and Meredith norms, using as the range the 10 to 90 percentiles. Norms to 5 years are based on measurements of a group of healthy white children of northern European ancestry living in or near Boston, for the most part of lower economic status but all under regular health supervision. Beginning at 5 years they are based on similar studies in Iowa City of children almost entirely of northwestern European descent and predominantly from the professional and managerial classes.

Using the median value in these norms, one might expect a so-called average boy to gain 9.7 inches and 14.7 pounds in the first year, 4.8 inches and 5.5 pounds in the second year, 2.5 inches and 5.5 pounds in the sixth year, 1.9 inches and 5.9 pounds in the tenth year, 3 inches and 14.6 pounds in the fourteenth year (around the time of the peak of the adolescent spurt) and 0.3 inch and 2.8 pounds in the eighteenth year. Girls will make somewhat similar gains in infancy, the preschool and early school years but by 10 years they are gaining more than the boys (2.3 inches, 6.5 pounds). In the fourteenth year girls have passed their peak of growth, gaining 1 inch and 9.3 pounds, and by the eighteenth year have stopped growing in height and are gaining only .8 of a pound in weight. These figures speak for themselves in indicating that averages tell a trend in decelerating growth, with a slight acceleration during adolescence; but they do not tell the story of the growth of any one child. Difference in the timing of sexual maturation accounts in a large measure for the obscuring of individual gains in late childhood and early adolescence. During the period of puberal growth boys have been observed to gain in height anywhere from 4.76 to 11.77 inches, with an average of 8.35 inches, and in weight from 7.2 to 64.8 pounds, with an average of 39.9, during a period of 2½ to 3½ years (Stolz, 1951).

Progress also can be expressed in terms of the percentage of achievement. At birth the percentage of mature height is 30.9 for girls and 28.6 for boys; at 5 years, 66.2 and 61.8; at 12 years, 92.9 and 84.2; at 15 years, 99.1 and 96.1 for girls and boys, respectively. Mature height is reached at 17 years for girls and 18½ years for boys (Bayley, 1956). No figures are available for weight.

Progress in height tends to be more regular than progress in weight. In the latter, children may show more irregularities, more periods of no gain, and sometimes loss. Weight is more variable because it includes soft tissues and water as well as bone and is easily susceptible to external factors. Be-

cause the environment contributes greatly to the evenness or the unevenness of progress in weight, those who are responsible for a child's environment in the home, school and the community and for planning to meet his needs can do much to smooth or disrupt the even tenor of his progress in weight.

Individual Differences. Individual differences in height and weight are apparent at birth and continue throughout the growing years. Differences are noticeable in size and in the pattern of children's growth both between boys and girls and between children of the same sex, and between children of the same sex in the same family. (See Figure 41.)

Sex differences in the pattern of growth emerge with the adolescent spurt. Boys and girls generally gain about the same amount yearly in height between 4 and 10 years and in weight between 5 and 11 years (Simmons, 1944). Girls, then, have a temporary superiority over boys. They pass through this period and reach mature height about 2 years before boys. Figure 40, *A* and *B*, illustrates this difference in timing. The girl (*B*) has completed her growth in height at about 15, the boy (*A*) at 17. Boys, on the other hand, grow more in height and weight and thus are generally taller and heavier as adults. Differences between children of the same sex can be observed in Figures 40, *A*, *C* and *D*. The degree of variability changes from time to time. Differences in size tend to be greater during periods of more rapid growth. During the elementary years when growth is slower and during the college or late adolescent years when growth is tapering off, individual differences can be expected to be less than during the late elementary and early high school years.

The child's individual pattern of growth tends to become well established during the second to fourth years and to become regular during the years of steady growth in middle childhood. During the early adolescent years it may change for some. Some children are tall from a very early age and remain tall. They will be tall adults and achieve their mature height 2 or 3 years before their average peers. Some children are small throughout their growing years, mature slowly and reach small adult stature usually after 18 for girls and 20 for boys. Some, however, who are tall or short, merely because they are slow or fast maturers and are not constitutionally large or small, may emerge from the adolescent growth spurt taller or shorter than might have been expected (see Fig. 40, *B* and *C*).

Differences in timing and length of the adolescent spurt are well demonstrated by the California Growth Study. The onset of the puberal period was found to extend from 10.5 to 14.5 years and ended anywhere from 14.2 to 17.5 years. It lasted from 2 to 4 years.

One study of children observed through 12 years of age has demonstrated that heavier children at birth tend to weigh more and (to a lesser degree) are taller in childhood than those with a smaller birth weight (Illingworth, 1949). Stolz and Stolz (1951) found that a boy's relative position in relation to that of his peers' tended to be kept during the pubescent period.

Some boys had an early beginning, some a late one; some a short period, some a long one. During this period, growth for some was rapid and dramatic, for some moderately intense and long, for a few intense and long, and for another few neither intense nor long. Thus, boys have varied growth experiences during these years. Some early developers become short, some medium, some tall in stature. Some late developers also become short, some medium, and

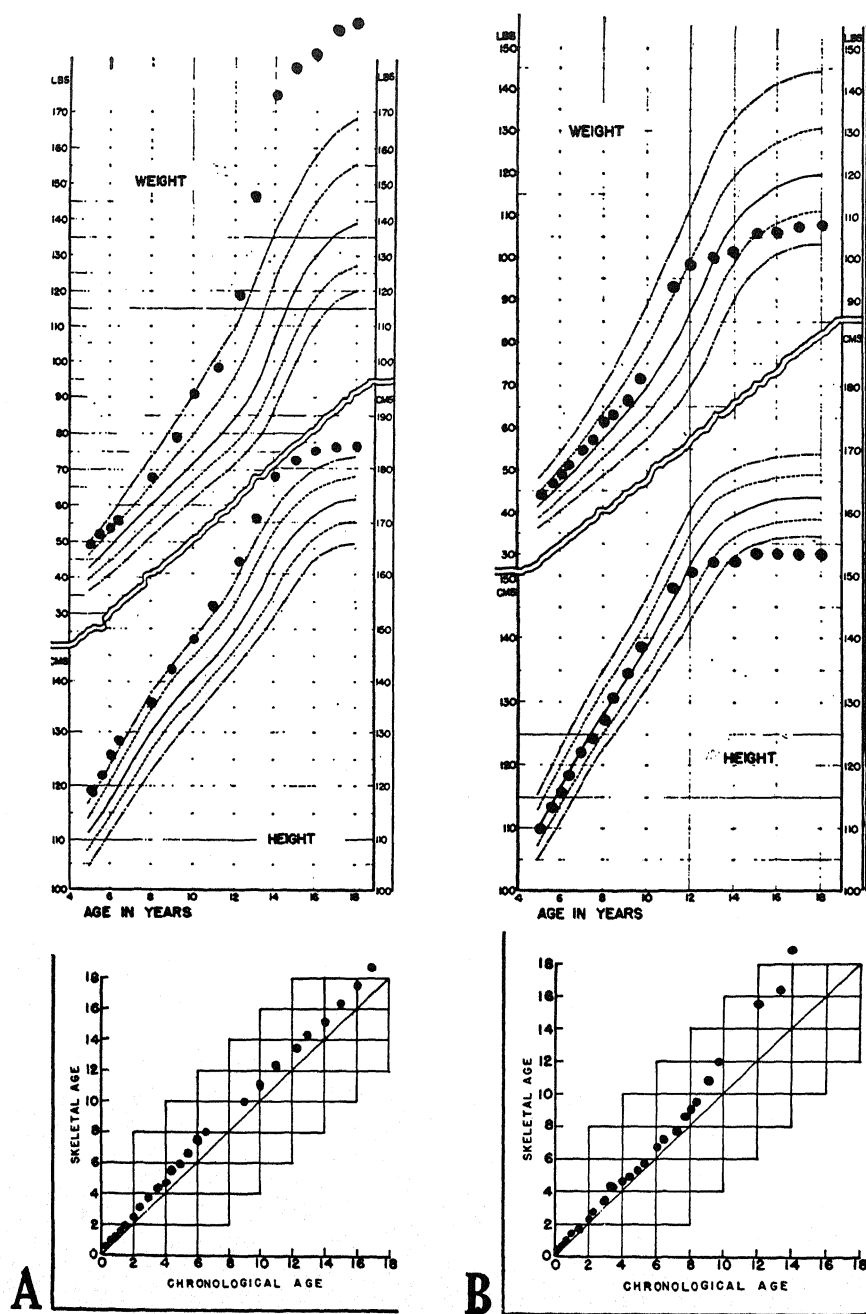



FIGURE 40. *A* and *B*.
(See opposite page for legend.)

some tall. See Fig. 40 *A*, *C* and *D*. A is a fast grower; C and D represent two different patterns of slow growth.

The majority of children, however, who begin their adolescent spurt earlier tend to grow faster and complete their growth earlier (Fig. 40, *A*). At maturity they may not be taller than late maturing children, as is seen in Figure 38. The late maturing children, on the other hand, tend to begin later and grow more slowly. (See Fig. 40, *C*, *D*). They are not necessarily shorter at maturity. In fact, some are taller than those who mature early. Thus, later maturing children may catch up eventually with their faster developing peers. This may be comforting to a child who is growing slowly and is concerned about it, and to his parents and teachers. An understanding that there are different paths to the same end and that being taller, shorter, stockier or slenderer than peers can be "normal" for children provides adults with the knowledge that will equip them to understand each child and to be able to interpret his growth to him. Children frequently need reassurance that they are normal, especially when their time schedule of growth is somewhat different from most or when they differ in size or build. This is especially true during early adolescence. Children can be misjudged as over- or underweight when their rate of maturing is overlooked. Such misjudgment may lead to ill-advised attempts to regulate weight by diet. Both physical and psychological harm can be done either by increasing or reducing the food intake of a child when such a procedure is not indicated by his growth pattern.

FACTORS CONTRIBUTING TO INDIVIDUAL DIFFERENCES. Variables that contribute to differences in height and weight include family-line heredity, of which race is a part; socioeconomic status, which encompasses diet, health, living standards and family surroundings; and emotions—in fact, all the extrinsic environment of the child.

Children in a superior socioeconomic environment generally are heavier than children of comparable age who live in less favorable circumstances (Meredith, 1957). An example of racial differences is the shorter stature of Japanese children than that of American children. Racial differ-

FIGURE 40. *A* and *B* and *C* and *D* illustrate some of the many varieties of individual differences in the patterns of growth and development that are encountered among relatively healthy individuals. Graphs of height and weight for ages 5 to 18 years are plotted against norms representing percentiles 10, 25, 50, 75 and 90. Skeletal age, as determined by the Todd inspectional method of evaluating films of the hand and wrist, is plotted against chronological age. Figure 40,*A* shows the growth and skeletal development of a boy who was advanced in both measurements at all ages, but particularly during adolescence. It is to be noted that he was somewhat advanced in maturation, as indicated both by skeletal age and by making his maximum gain in both weight and height in his 13th year. The presence of pubic hair at 12 years and axillary hair at 14 years adds further confirmation to his slightly advanced maturation. The greater deviation from his original percentile position in weight than in height during the adolescent years indicates that accompanying his early and vigorous adolescent growth this boy also became relatively obese.

B presents the growth and skeletal development of a girl who matured early and rapidly. She not only attained her maximum growth very early but terminated it early and rapidly so that she became a relatively shorter and lighter person at maturity than would have been anticipated. Her early pubescent growth was accompanied by early appearance of pubic and axillary hair, by menarche at 10 years, 8 months and by rapidly advancing skeletal maturation after 9 years of age. In respect to these attributes, she had attained approximate adult maturity at 14 years of age. (From studies of health and development conducted by the Harvard School of Public Health; through the courtesy of Dr. Harold C. Stuart.)

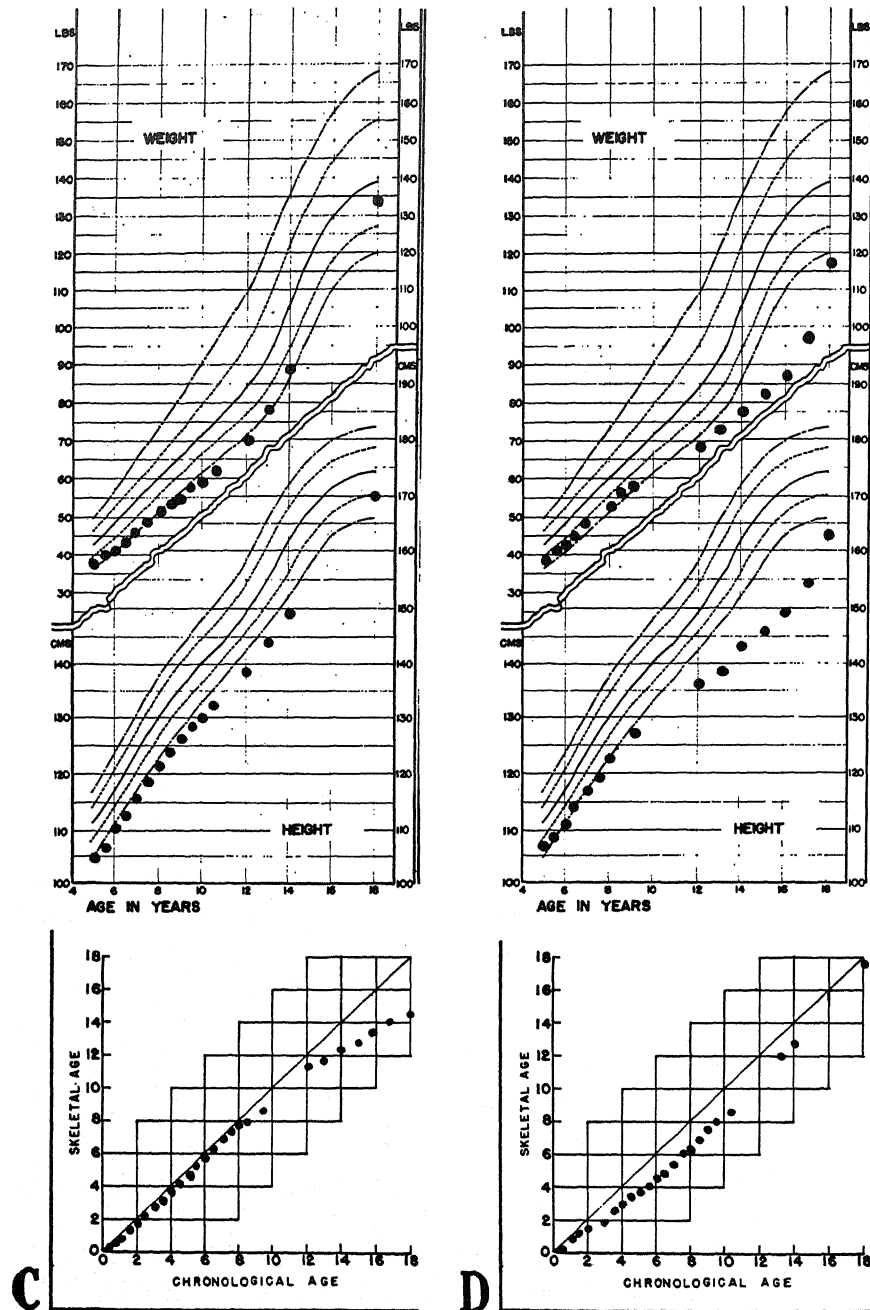



FIGURE 40. C and D.
(See opposite page for legend.)

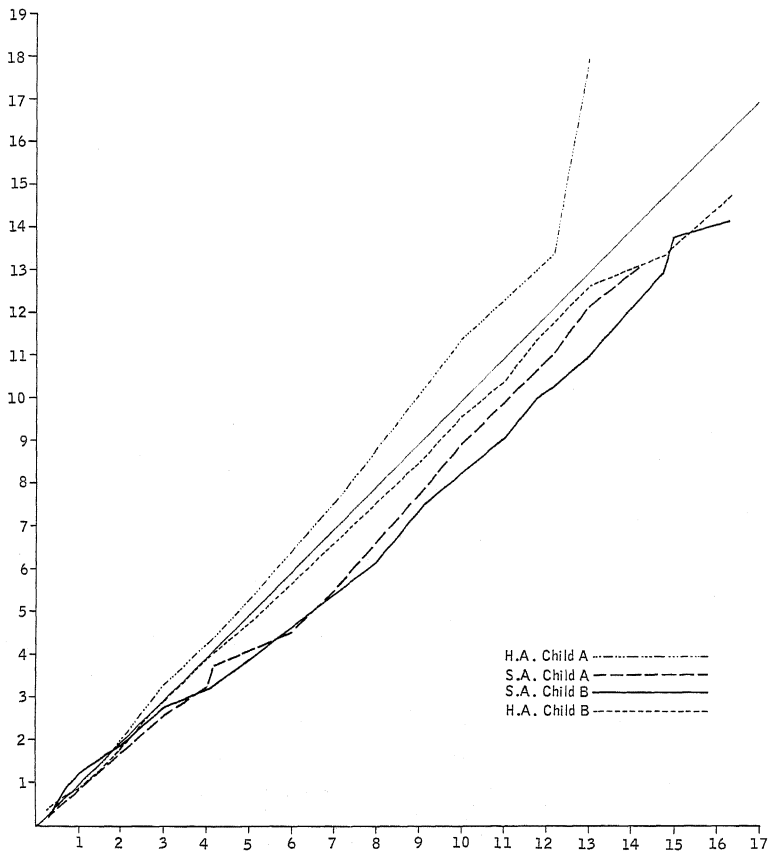



FIGURE 41. Height age and skeletal age in two brothers. Child A and Child B.

FIGURE 40. *C* shows a small boy who grew and matured skeletally in an expected manner up until about 9½ years of age after which he lost position in weight, height and skeletal development. He had clearly become much retarded by the age of 16, after which his height and weight curves suggest a very late but adequate pubescent growth. This boy showed the first appearance of pubic hair at 17 years and still had no axillary hair at 18 years. These features correspond quite well with his apparent maximum growth in the 18th year and his 3 years' retardation in skeletal age at this time.

D presents data for a boy who was not only consistently small but somewhat slow in maturation as indicated by retarded development in the hand and by the appearance of pubic hair at 13 years and axillary hair after 14 years. (From studies of health and development conducted by the Harvard School of Public Health; through the courtesy of Dr. Harold C. Stuart.)

ences have a strong environmental component, however. Japanese children born and reared in the United States have been found to be taller than those born and reared in Japan (Greulich, 1957). American Negro children, when compared to white children of all socioeconomic levels combined, are similar in height and weight. Studies of Negro infants seem to indicate that Negro newborns tend to be somewhat smaller than white newborns, but those from families of the lower middle class have growth curves similar to those of white infants from the same class (Meredith, 1952). Birth weights of Negroes in 1950 were higher than those reported earlier. Emotional disturbances can slow up growth. Atomic bombing has been demonstrated to interfere with growth.

Growth of an individual child is, therefore, dependent upon the interaction of heredity and environment. Heredity sets the potential for growth; health and environment, including nutrition (see Chapter 4), determine the degree to which that potential is achieved.

Evaluating Physical Status and Progress. Height and weight are frequently used as criteria for judging physical status and progress, and the adequacy of growth is determined by assessing them (Krogman, 1950). Status is determined by comparing his growth with that of other children; progress is determined by comparing the child with himself from time to time through the accumulation of serial measurements. Population norms or standards provide the means for evaluating status. The effectiveness of the use of these norms depends to a large degree on the selection of the particular norm and the interpretation made of the comparison. Different norms represent different groups of children, that is, children of varying hereditary and environmental backgrounds. The norm chosen needs to be one compiled from a group of children with backgrounds and living conditions similar to those of the child being evaluated. More recent norms are preferable to older ones since the children of today are taller and heavier than those of the twenties or thirties (Tanner, 1962). Because of the sex differences in growth, norms for boys and girls are separate.

A satisfactory norm includes not only an average but also a range, thereby indicating a broad pathway of normality. This pathway of normality may be expressed in terms of an average and standard deviation or in terms of percentile rank. When averages and standard deviations are used, approximately 68 per cent of the children measured might normally be expected to fall between plus and minus one standard deviation; approximately 95 per cent will fall between plus and minus two standard deviations.

In a norm based on percentiles, measurements are ranked according to magnitude from the smallest to the largest as they would be found in any typical series of 100 children. The middle point or median is represented by the fiftieth percentile. Half of the children might normally be expected to fall between the twenty-fifth and seventy-fifth percentiles, which are equidistant from the median. Eighty per cent of the children might be expected to fall between the tenth and ninetieth percentiles.

Norms are used more effectively when progress and status of the child can be observed concurrently. This can be done when norms are represented as curves which give the pattern of growth for a large number of children over a period of time. When an individual child's series of measurements are plotted, a comparison can be made between the individual curve and the group curve. Unless circumstances interfere with his

growth pattern, a child will tend to maintain the same relative position with respect to his age group from time to time except during the puberal spurt when differences in the timing of the spurt of growth may produce changes in relative positions in individuals' curves.

The Fels Composite Sheet provides another way of following growth progress by plotting standard scores. Standard score represents the difference between the normative value and actual value at a particular age divided by the standard deviation for that age. Any norms with standard deviations may be used. Evenness or unevenness of the horizontal line indicates steady or unsteady growth as compared to that of other children.

Yet another device for evaluating height and weight, the Grid-Graph formulated and developed by Wetzel (1944 to 1948), is a height-weight-age gauge of individual progress. It consists of two parts (see Fig. 42). The first, on the left, is a channel system of nine channels on which height is plotted against weight and which represents gradations in build from slender on the right to stocky on the left. These channels are crossed at regular intervals of ten units (isodevelopmental lines) which are incremental units. The second part, on the right, is a grid for plotting developmental levels against chronological age, with a series of curves, auxodromes, representing the speed of development from slow to fast. Healthy development travels channelwise from about 6 years to at least 18. While the Grid covers ages 2 to 6 this seems to be a period of relative insta-

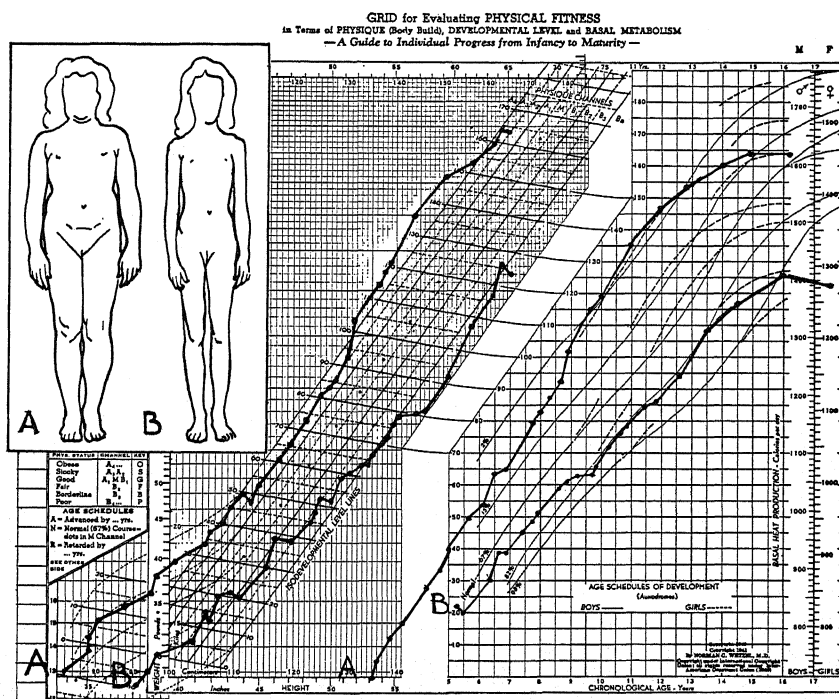



FIGURE 42. Progress of a stocky girl (*A*) and a slender girl (*B*) recorded on the Wetzel Grid, showing differences in build, changes in physical status, and differences in speed of development. (Copyright by Norman C. Wetzel, by National Education Association Service, Incorporated.)

bility in body build. Wetzel also has a Baby Grid (1946) which covers the period of infancy to around 2 years. "Cutting across" two or more channels is a signal for careful scrutiny of a child's growth (Krogman, 1950). Wetzel's criterion for significant deviation from a child's own path of growth of one half channel for ten developmental units may be too fine since many healthy children have been shown to cut across channels. Baer et al. (1962), in a pattern analysis of longitudinal measurements of height and weight of 66 boys, found indication that the similarity in curve patterns of the Wetzel developmental age was significantly greater with weight age than with height age. In speed of development a child's curve will be expected to parallel one of the auxodromes. The particular one will depend upon his schedule, whether it be slow, average or fast.

Figure 42 illustrates the use of the Grid. The height and weight of two girls are plotted, one from 5 to 16 years, 3 months, and the other from 5 years, 4 months, to 17 years, 6 months. Girl A has always been stocky and for a time became overnourished (excess intake over output of energy) but has returned to the A channel which undoubtedly is her "preferential path." A number of factors, namely, too much food, too little activity, a temporary emotional disturbance and, perhaps, a slight hypothyroidism may have contributed to this shift to the left. Her return to her channel followed a correction of these imbalances. The curve at the right indicates (1) that her schedule was faster than that of most children; (2) that it was steady except for a shift between 8 and 15 years. The other girl (*B*) of slender build has moved to the extreme right, out to B_4, the area of poor physical status. The curve at the right indicates that she is on a slower schedule than girl *A*. Her progress has been somewhat unsteady. Girl *B* has a history of illnesses, small appetite, and much activity. She is an example of a child who has been "in the red" in her energy balance. This Grid can be useful in studying an individual child in order to ascertain whether his progress is satisfactory for him. Marked deviations from channel or auxodrome call for a physical examination and an evaluation of his environment and habits.

Another method for determining normal weight for children between 5 and 18 has been devised by Massler and Suher (1951) in which they use the measurements of calf girth and height. The formula $\frac{(\text{Calf girth})^2}{K} \times \text{Height}$, was derived on the basis that the human body may be represented by an irregular cylinder whose specific gravity, under ideal conditions of tissue balance, approximates 1.0. K is a correction factor for the irregularity of the cylinder and differs between boys and girls. Calf girth was found to be directly and closely related to the body build of a child. Normal weight for boys and girls can be determined by calculation or without calculation by the use of a nomogram.

Qualitative Aspect of Growth. To know that a child is large or small or that he is growing slowly or rapidly is insufficient. We are also interested in the quality of his tissues, the proportionate growth of bone, muscle, fat and body segments and, thus, in the build or physique of the child. A large child may not be a better child, for a small child with muscles firm to touch, promptly and adequately responsive to stimulation and with straight bones that contain a good store of minerals will have an advantage over a large child with flabby muscles and poorly mineralized bone. An increase of a pound in weight may mean that a pound of muscle, a pound of fat or a

pound of water has been accumulated. Because of differences in the timing of growth of the different parts of the body, weight increases in the early years may have a different meaning, qualitatively, than similar increases later. Much of the increase in infancy, for example, is due to growth of the brain and vital organs; much of the increase in adolescence is due to growth of bone and muscle.

Components of Weight. The components of weight vary in their proportion to total weight with age and between children of the same age. For example, at birth about 25 per cent of the total weight can be attributed to muscle, 16 per cent to the vital organs and 15 per cent to the central nervous system, whereas at maturity muscles, viscera and the central nervous system will represent approximately 43 per cent, 11 per cent and 3 per cent, respectively. Two children may weigh the same, yet one may have relatively large muscles and the other relatively more fat.

The accumulation of muscle and bone follows the pattern of growth of the body as a whole, with accelerating periods in infancy and early adolescence, lagging somewhat behind total body growth during infancy and childhood but compensating for this later in adolescence (Lombard, 1950). Subcutaneous fat, on the other hand, increases from birth to about 9 months, then decreases until about 6 years and again increases after 6 years. From 1 to 6 years girls lose fat less readily than boys, and gain it more readily thereafter (Tanner, 1962). During adolescence a marked sex difference appears when fat continues to increase for girls but decreases for boys. Girls reach their peak at 15.5 years; boys reach their low point at 14.5 years.

There are also changes with age in the distribution of fat in that after about 12½ years fat tends to decrease on legs and arms, increase in waist and chest, and in hips tends to increase in girls and decrease in boys (Meredith, 1957). Thus, there are readjustments in amounts and position. Even when height and weight change little in later adolescence, shifts in the relative proportions of bone, muscle and subcutaneous tissue take place. Changes in absolute and relative amounts of muscle, bone and fat result in changes in body contours.

Some boys differ from the regular trend of growth in fatty tissue by having a period of plumpness as they pass from childhood into early adolescence. In the California Adolescent Study it was found that some boys had a conspicuous accumulation of fat around the nipples and over abdomen, hip and thighs. These differences, which suggested male-inappropriate development, lasted from 1 to 3½ years and were psychologically disturbing to the boys.

Early maturers have more fat (as measured on the calf of the leg) than late maturers (Reynolds, 1952). During childhood and adolescence boys are consistently larger in muscle and bone and girls in fat. It would seem that increase in weight during adolescence means relatively more increase in muscle for boys and fat for girls. This has significance for adults in understanding sex differences, both in appearance and in physical performance.

Changes in Body Proportions and Form. It is obvious that small children differ from adults not only in size but also in body form. The growth pattern of muscle, bone and fat discussed above suggests why the characteristically chubby baby changes to the thinner and "wiry" preschool child and gradually acquires a body build which becomes characteristic for the individual. In the process of growing up changes occur in body proportions and contours and the characteristic sex differences in body form emerge.

Differences in degree and timing of the growth of different segments of the body produce change in body proportion with age. The proportional growth of the head steadily diminishes; the legs grow relatively longer until about 15 years in boys and about 13 years in girls, after which the stem length (taken in a recumbent position) increases proportionally more. The head changes from one-fourth of the total length at birth to about one-sixth at 6 years and about one-eighth at maturity. Legs change from about three-eighths of total length at birth to about half the total length at adulthood. Legs increase in length almost five times from birth to maturity; the head, twice; and the trunk, three times. The infant, who becomes chubby during the first year, becomes the slenderer child who broadens out later, predominantly in the shoulders if a boy and in the hips if a girl.

During the elementary years boys and girls become more slender in arms and legs at a diminishing rate. This slenderizing trend stops at around 7 years for the trunk but continues in the extremities. The sex difference in the width of shoulders and hips begins at this time for girls when they begin to increase their hip width relatively more than their shoulder width. Boys do not as yet show any increase in relative shoulder width. These differences become noticeable during the adolescent growth spurt (Bayley, 1943).

This adolescent growth spurt does not occur simultaneously for all parts of the body. For both boys and girls increase in leg growth is one of the earliest signs that childhood is ended. The maximum growth for stem length or sitting height (measurement of head and trunk taken in erect position), width of chest, shoulders and hips, all of which occur about the same time, follows leg length. While this is the pattern for most children, for some there is a different sequence. For girls, these increases generally come within a year preceding menarche (Stuart and Prugh, 1962). For boys the peak of increments comes within the period of maximum genital growth (Stolz, 1951). Sex differences in shoulders and hips have been mentioned above. Early maturers tend to have more weight for height; late maturers tend to be linear people (Tanner, 1962).

Body proportions and the amounts of the three tissues and their distribution contribute to an over-all *body form, build* or *physique,* which is a vital part of an individual's uniqueness. Body form may be designated in various ways. For example, individuals may be classified as slender to stocky, as having "soft roundness," "muscular solidity" or "linearity-delicacy" in varying degrees and proportions, or as varying in the degree of masculinity or femininity.

It would seem that differences in physique may be recognized at a fairly early age for many children. In a follow-up of obesity during the hormonal reorganization of puberty, Vamberová et al. (1962) found a "worsening" of obesity in all children; in puberty obesity improves partially in boys, but worsens in girls. Nevertheless, studies using different methods of typing physique give evidence that build tends to be relatively constant. Hammond (1957a) has noted that similar types appear at all ages. Dupertuis and Michael (1953), using Brush Foundation height and weight data of children from 2 to 17 years and somatotyping the subjects as young adults, found that the somatotype, as indicated by measures of height and weight, remains fairly constant, at least for ectomorphs and mesomorphs, throughout childhood into young adult life. There is evidence from an anthropometric survey in the Army that this constancy does not necessarily hold for adults (Newman, 1954). Type consistency is low in infancy but increases throughout the school years. In some children

growth accelerates their type; in some, it decreases their type shape, but most continue to maintain their build. Some changes in build have been noted in the California Growth Studies. Tanner (1962), in discussing the evidence relative to the effect of the adolescent spurt on body build, states that this spurt, whether early or late, causes no radical change in body build but rather adds the finishing touches to a build established much earlier.

Physique is an important factor and plays a significant role in the evaluation of weight, as indicated earlier. Two children of the same height will vary considerably in weight if one is of stocky build and the other of slender build. To expect each to weigh the same would badly penalize one or the other. One study indicates that children with "muscular solidity" (mesomorphic) tend to be heavier, shorter, reach their peak in puberal growth spurt in height-weight earlier, and grow faster than those with "linearity-delicacy" (ectomorphs) (Dupertuis, 1953). Endomorphy (heavy body build) is associated with early biological maturity in women; mesomorphy (slight or athletic build) bears no significant relationship to maturation rate (McNeill and Livson, 1963). Mesomorphs in the California Adolescent Study tended to be stronger than ectomorphs. Juvenile delinquents in one study had a higher mesomorphic rating than nondelinquents (Glueck and Glueck, 1957). These examples indicate the interest in the study of the role of body build in an individual's life. In relating build to behavior or performance it must be remembered that body structure is only one in a number of contributing factors.

BODY FRAMEWORK

The frame of the body consists of the bones bound together by tough bits of connective tissue called ligaments to form the skeleton. To this skeleton are attached the muscles. Thus, the bones and muscles serve as support in holding the body together and as protection for the organs of the body. The bones of the head protect the delicate structure of the brain so that pressures, bumps and blows from without, unless very severe, do not damage brain tissue. The bones of the chest protect the heart and lungs and the pelvis acts as a support for the abdominal organs. The working together of muscles and bones makes locomotion possible. The bones not only serve the function of a framework and a protection for the more delicate body structures but also are the seat for the manufacture of blood cells and provide the body with a store of calcium that can be drawn on when other parts of the body require additional calcium for performing their functions.

Body Build and Behavior. In a study of body build and behavior in young children, Walker (1962) found that the "typical" mesomorph was assertive, expressive, fearless, energetic —the boys using this energy in aggressive physical encounter, the girls in warm social interaction. Ectomorphs tended to be cautious, to conform, to show emotional restraint, and to be aloof. Walker adds: "The physique-behavior associations appear multiply determined, arising from primary bodily conditions, direct and indirect social learning, with variations in physical energy, in bodily effectiveness for assertive behavior, and bodily sensitivity as important links."

In a study of preschool children, Walker (1963) found only chance relationship between body build and behavior in boys, but a significant relationship for girls. The sex differences were thought to be associated with a possible difference in the response of mothers to boys and to girls.

Bone Development. Most bones develop from a cartilaginous model

which is laid down early in prenatal life. (The exceptions are those which develop in a membranous area, as is true of the bones in the vault of the skull.) This cartilage is gradually replaced by bone, beginning at ossification centers from which it spreads concentrically. Through intricate cellular processes, the organic form is established and minerals, predominantly calcium and phosphorus, are deposited. The mineral salts give hardness and rigidity to bone; the organic material provides its tenacity. The process of replacement of cartilage begins early in embryonic life and continues until the skeleton has reached full maturity. Ossification centers appear from the middle of the sixth week after fertilization and continue to appear until 20 years. Most primary centers appear before birth; most secondary centers appear after birth.

Bone growth takes place at the edge of existing bone, not by expansion from within. Bones grow in width by adding new bone at the outer edges underneath the periosteum, and long bones grow in length toward each end of their cartilaginous models. In long bones another ossification center appears at the ends of the cartilaginous model and is called an epiphysial center of ossification or epiphysis, which can be noted in Figure 43 where the two bones of the arm have at the end of each a smaller bone which is an epiphysis. While a long bone is growing there remains a noncalcified area, observable in an x-ray, between the shaft or diaphysis and the epiphysis. New bone is produced by cellular activity at the edge of the diaphysis of this area. At the same time the ossification of the epiphysis continues. Growth of the long bones is terminated when the epiphysis and diaphysis are fused. Figure 43 illustrates the bone development of the hand and wrist that can be expected of most girls according to the Greulick and Pyle Atlas (1959) at birth, 1 year, 2 years, 5 years and maturity. Note the absence of epiphyses and carpal (wrist) bones at birth, the gradual appearance of epiphyses and carpal bones, the changing shape of the bones during early childhood and, finally, the mature hand with complete union of epiphyses and diaphyses at 18 years.

Bone development continues throughout the growing years and is not completed generally until the individual is in his twenties. In the early years the skeleton has many aspects of immaturity that distinguish it from that of an adult. In the young child all of the cartilaginous model has not been replaced by bone and larger spaces between bones exist at the joints. With more space between the ends of bones at a joint and longer and less firmly attached ligaments, the child has more flexibility in certain movements, all of which give him the appearance of being double-jointed. Immature bones also have proportionately more water and protein-like substances and less minerals. Thus, young bones are less resistant to pressure and muscle pull and, therefore, more liable to deformity. In the school years sitting for long periods in ill-fitting seats and at inappropriate desks may lead to postural defects of the back. Growing bone also has a rich supply of blood. Thus, growing bone not only receives a steady supply of bone building materials but also will be subjected more readily than mature bone to any infecting organism that may be carried in the blood stream.

As bones grow they pass through a series of regular changes from small dots (as observed in an x-ray) to the characteristic form of each bone at maturity. These changes can be observed by x-rays taken at intervals of time. Figure 43 illustrates the same stage of development (first appearance) in three bones, namely, the epiphysis of the radius, the epiphysis of the ulna and the sesamoid—that

Birth 1 year 2 years 5 years 18 years

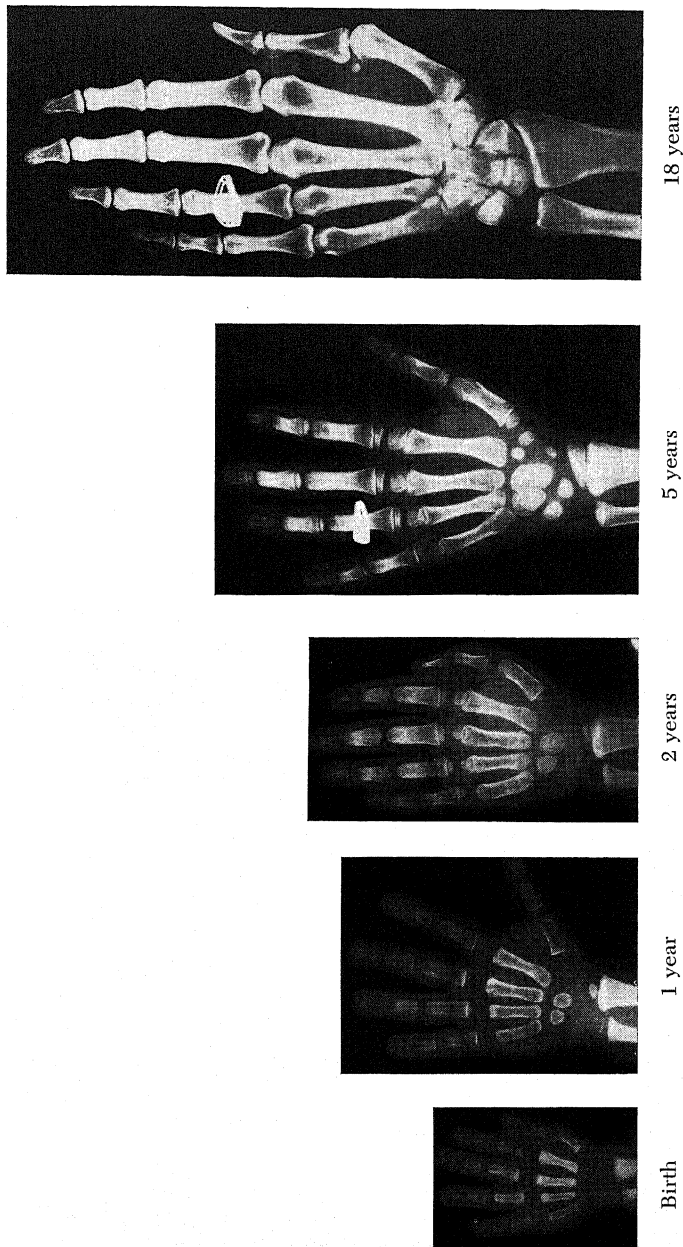



Figure 43. X-rays of hand and wrist showing skeletal maturation of girls at birth, 1 year, 2 years, 5 years and 18 years (mature hand) according to the Greulich and Pyle standards. (Reproduced from Greulich, W. W., and Pyle, S. I.: Radiographic Atlas of Skeletal Development of the Hand and Wrist. 2nd ed. Stanford, California, Stanford University Press, 1959.)

small round bone in Figure 43 (the fusion hand) seen at the base of the thumb—but at widely different chronological ages and the beginning of the final stage of bone development (fusion).

EPIPHYSIAL FUSION IN ADOLESCENCE. The process of epiphysial fusion was followed in 151 normal children by x-ray of the right hand. Individual epiphyses take 2.8 to 4.2 months to fuse, but some children fuse all their epiphyses at much the same time, whereas others spread the process over up to 2½ years (Lavine et al., 1962). Note also the appearance of other epiphyses, of carpal or wrist bones and the change in the size and shape of the bones. The sesamoid bone announces approaching menarche in girls since it generally appears within 2 or 2½ years prior to menarche. Among Brush Foundation children in Cleveland it appears in girls at 10.1 ± 1.1 years and in boys about 2 years later at 12.6 ± 1.1 years (Buehl and Pyle, 1942). The beginning of the fusion of shaft and epiphysis of the last phalanx of the second finger is also related in time to menarche. Bone development in the hand is completed with the fusion of all the epiphyes and shafts of the bones, for girls generally in the seventeenth year and for boys in the nineteenth year.

Bones may record metabolic disturbances resulting from severe illness and other adverse circumstances and also changes taking place in the early stage of recovery from malnutrition by the appearance of bone scars or transverse lines on certain bones. Such scars or lines indicate that normal growth has been interrupted (Greulich and Pyle, 1959). Some children after a severe illness will show bone scars, others of comparable age and with illness of the same severity will show none. The reasons for these individual differences of response are not known at present.

SKELETAL DEVELOPMENT VARIATIONS. Children differ in skeletal development as they differ in height and weight, although the process of maturation is less subject to fluctuations than is that of growth. Girls are skeletally ahead of boys. Hansman and Maresh (1961) found that girls have eight carpal centers by 11 years of age, boys by 14 years. They define the children whose skeletal ages are consistently above the group median by more than 12 months as the early maturing children, and those whose skeletal ages fall more than 12 months below the median for the group as late maturing children. Sexual difference becomes progressively greater so that upon entering elementary school girls are approximately a year ahead of boys; upon entering high school they are approximately two years in advance. Children of the same sex also differ in their speed of skeletal maturation. Pyle and Hoerr (1955) found that 100 healthy 8 year old boys ranged in their skeletal developmental level from 6 to 10 years. There are, thus, fast maturing and slow maturing children of both sexes. American Negro infants tend to be skeletally more mature at birth than white infants of comparable birth weight (Christel, 1949). During childhood, although no direct evidence is available at present, it may be assumed that Negro and white children of comparable socioeconomic status are similar in the process of their skeletal maturation since their reproductive maturation is similarly timed.

The density or degree of mineralization of bone which can be revealed by the depth of the shadow in an x-ray also differs in children and in one child from time to time. (A less dense or less well mineralized bone is indicated by a lighter shadow in the x-ray film.) The cause of the fluctuation of density, undoubtedly associated in some way with calcium metabolism, has not yet

been ascertained. Certain behavior characteristics have been noted to accompany lightly mineralized bone. Todd (1938) reported: "So frequently do we find lightly mineralized bones in the highly strung child, who is prone to fatigue, restless, often very alert, irritable, poorly adjusted, apprehensive and fearful, with deficient powers of attention and concentration, that we have come to suspect deficiency in mineralization as the physical counterpart of this emotional maladjustment. But one should point out that one is dealing not with cause and effect but merely with two aspects of a constitutional handicap." These individual differences between children of the same and opposite sexes have implications for all adults who live or work with children.

In many parts of the world children are reaching physical maturity earlier than in the 1930's and 1940's. Studies in the Saskatoon (Canada) public schools found that, when compared with 1936 and 1946 measurements, children in 1956 were generally taller and heavier, the chief increases having occurred between 1946 and 1956. Children in the less privileged areas were generally shorter and lighter in weight than were those in the more privileged areas (Binning, 1958). Children in Finland in the 1960's are distinctly taller than children of the same age in 1900 and in 1930 (Takkunen, 1962). Children in the United States in 1958-1959 were taller and heavier and stronger than those in 1934-1935 (Espenschade and Meleny, 1961).

ASSESSMENT OF SKELETAL MATURATION. This can be done by x-ray examination of the joints of the body and comparison with a standard time of appearance of ossification centers, changes in bone contours and, finally, union of epiphysis with the diaphysis. The growth of the bones of the hand and wrist is considered by many to be a satisfactory representative of the growth of the skeletal structure as a whole. (X-rays of all the joints give a more complete picture, but such a procedure is not always feasible.) Bone development of the body, therefore, can be evaluated by inspection and comparison with a standard x-ray picture of the contours of the ends of the bones of the hand, of wrist bones and epiphyses and of progress toward union of the epiphyses with the shaft of the bone. Standards used are Greulich and Pyle (1959). The degree of maturity is expressed in terms of skeletal months or years. Another method has been suggested by Acheson (1957). Instead of using skeletal age he uses a maturity score or points based on the recognition of changes in shape of the bone which are described as maturity indicators. In the atlas of Greulich and Pyle each bone is assessed so that symmetry of development may be observed. Thus, any imbalance can be observed. An imbalance should prompt investigation of the health history of the child to find contributing factors. A child's progress toward maturity is more important than his status at the time of the x-ray. For example, a child in a period of 12 calendar months may progress 12 months in skeletal age. In such a case his progress in skeletal age is in keeping with his progress in chronological age. On the other hand, if he gains only 4 months in skeletal age during the same period, his skeletal growth is lagging behind. If his gain were 15 months, his bone growth would, obviously, be progressing at an accelerated rate.

The range of normality in the Greulich-Pyle Atlas is considered to be ± 2 standard deviations. The majority of a group of radiologists, asked to give their opinion of the skeletal age limits of apparently normal 6 year olds, gave 5–0 to 7–0 as the limits (House, 1950).

SKELETAL DEVELOPMENT AS INDICATION OF PHYSICAL MATURITY. The use of the skeleton in determining bodily maturity is important because (1) its maturation extends over the whole period of development, (2) the process can be observed by the use of x-rays and (3) its development is closely related to the development of the reproductive system which is assumed to be a reliable indicator of general bodily maturity. This assumption is based on the fact that many changes in tissues other than those of the reproductive organs, including skin, hair, sweat glands, distribution of subcutaneous fat and muscle growth, occur at early adolescence. The degree of reliance that can be placed on the skeleton as an indicator depends greatly on the degree of harmony in a child's development in all its parts. Naturally, the value of any tool in assessing development depends on the way it is used.

Knowledge of the skeletal development of a child aids adults in understanding a child and being appreciative of his behavior and needs. An adult can be of further service to a child by interpreting his development to him. The value to the adult of information regarding a child's skeletal development rests in its relationship to other aspects of development. For example, it is a more reliable indicator of growth in height during early adolescence than is chronological age. Stolz and Stolz (1951) found that the range in skeletal age at the onset of the puberal period of growth in height in which maximum growth occurs was less than half the range in chronological age. The average skeletal age at the onset was 13 years. Because skeletal age is closely related to the percentage of mature height attained at a particular age it is possible to predict, with fair accuracy, how tall a child will be at maturity if his skeletal age and height at the time are known. The concern which fast-growing girls and slow-growing boys register about their size can be relieved for a tall girl if she can be assured that she will not grow much more and for a short boy if he knows that he will still add some inches to his stature. The approximate age of menarche can be anticipated by knowing a girl's progress in skeletal maturation. Boys also who are on a slow or fast schedule in skeletal development may be expected to be slow or fast in sexual maturation and may differ accordingly in their interests and attitudes during the high school years. As is true with height, sexual maturation more closely follows skeletal maturation than chronological age (Greulich and Pyle, 1959). This is indicated in Figure 37 of three 14 year old boys who differ in size, genital development and skeletal age.

An adult who is following the growth of a child and is watchful of skeletal age progress can provide more adequately for his needs and can help that child to understand and accept his own particular pattern. By so doing the adult can ease the child's social adjustments and further his school achievements.

Development of the Head. The relatively large head of the young child has been mentioned before. The head of the child at birth measures 12 to 14 inches in circumference, being slightly larger in boys than in girls. By 1 year it has increased about 33 per cent; by 5 years, when it closely approximates its adult size, it has increased 48 per cent (Washburn, 1959). Not only does the infant have a relatively larger head than an adult but also a relatively larger brain case and relatively smaller face. As he grows, the facial part of the skull grows downward and forward. The percentage of growth achieved postnatally in breadths is 40 to 45 per cent; in heights, 55 to 60 per cent; in depths,

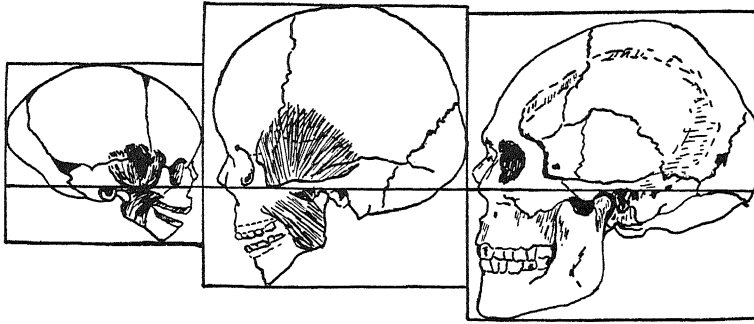



FIGURE 44. Skulls of newborn, 6 year old boy and adult drawn in their natural proportions. (Brash, J. C.: The Growth of the Jaws, Normal and Abnormal, in Health and Disease. The Dental Board of the United Kingdom, London, 1924, p. 147.)

65 to 70 per cent, indicating the greater forward growth of the face. It grows faster than the cranial portion and, thus, assumes more prominence. At birth the relationship of face to cranium is one to eight; at 6 years it is one to three; at 18 years it is one to two (Moyers and Hemrend, 1953). Figure 44 demonstrates these changes. Along with the more rapid growth of the face the features gradually assume their mature characteristics. The development of the skull is associated with the growth of other structures of the head, and these structures affect the growth of the skull at different periods. The brain and the eyeballs in infancy, air sinuses during infancy and childhood, the teeth during their eruption and the muscles in later childhood and adolescence, have their effects upon the proportional growth of the head.

Development of Teeth. At the time of birth the twenty deciduous (baby) teeth and the first permanent teeth (sixth-year molars) are developing in the child's jaws. Both the enamel, or outer portion, and the dentin, or inner portion, are forming. By the time the tooth erupts the enamel is fully formed. The dentin, however, continues to form until the root is completed, which occurs sometime after eruption. The development of the deciduous teeth, including the crowns and roots, is completed between 3 and 4 years. Development of the permanent teeth, which begin their development in the fifth fetal month, follows the sequence of development of the crown, resorption of the root of the deciduous tooth where a permanent replaces a deciduous tooth, eruption and, finally, completion of the root (Watson and Lowrey, 1962). The calcification of the 32 permanent teeth, which began at birth with the beginning of calcification of the first or sixth-year molars, continues through infancy, the preschool, and the school years. The last permanent tooth to erupt, the third molar or "wisdom" tooth, does not complete its growth until sometime between 18 and 25 years. Wide individual differences occur in all stages of tooth development. Girls are advanced over boys, although the difference is not so great as that found in skeletal development.

Tooth development is influenced by heredity, prenatal conditions, nutrition, illness and certain endocrine factors. It does not appear to be influenced by stage of biological maturing. Precocious puberty cases, despite advanced bone age and establishment of menses, do not show an advanced tooth maturity (Wagner et al., 1963). Materials that are neces-

sary for the development of teeth of good quality are calcium, phosphorus, vitamins A, D and C.

Like bones, teeth can register various misfortunes in health during the growing years. Enamel is laid down regularly and rhythmically in layer after layer so that a series of rings, microscopic in size, is formed, somewhat like tree rings. If this process is undisturbed these rings are regular; if disturbed they are accentuated. Any health mishap will be reflected, of course, in the particular teeth whose enamel is developing at the moment. Permanent teeth will, therefore, reflect disturbances in infancy and the preschool years. For example, an imprint left by measles at 3 years of age may be found on a child's permanent incisors when they erupt. The growing tooth, therefore, reflects through its growing enamel and dentin the normal and pathological variations in metabolism.

Eruption of Teeth. The first tooth to appear in the mouth is generally a lower front tooth, which erupts around 6 months. During the first 2 to 3 years the other deciduous teeth appear. A quiescent period follows until about 6 years when the first permanent teeth erupt. Even before these teeth appear, and as the permanent teeth are developing in the jaw beneath the deciduous teeth, the roots of the latter are gradually disappearing by the process known as resorption. When a permanent tooth is ready to erupt, only the crown of the temporary tooth above it is left; the tooth becomes loose and drops out. At 6 years of age the child may have all of his deciduous teeth but more often he has lost some of his front teeth, which have been replaced by partially erupted permanent incisors. Perhaps he will also have his sixth-year molars. During the elementary years he will be passing through a stage of mixed dentition when he will have both deciduous and permanent teeth in his mouth. By looking at Figure 45 it can readily be seen why Dr. Broadbent calls this the "Ugly Duckling stage." From 6 to 12 years the child goes through the process of replacing old teeth with new ones which, at first, look out of line but, with the correct order of eruption, are later pushed into place by the eruption of nearby teeth. He acquires a mature look by 12 years of age for by this time he has all his permanent teeth except his wisdom teeth. Wisdom teeth sometimes fail to erupt because of failure to develop or because of lack of sufficient space in the jaw. An insufficient increase in the growth of the jaw during early adolescence is probably responsble for the latter condition, termed "impacted teeth."

The teeth erupt in characteristic sequence (Table I), with wide individual differences in timing. A child, however, tends to be consistent in timing, being slow, average or advanced in the eruption of both deciduous and permanent teeth (Stuart and Stevenson, 1959). Because of this wide variability in eruption time there is no need for concern when children are a little behind schedule. Little difference between boys and girls is noted in the deciduous dentition. Shedding of any of the deciduous teeth is rare before 4 years of age, beginning as a rule at the age of 5 years in girls and 5 years 6 months in boys (Wanda, 1960). There are familial differences. In some families children acquire their teeth early; in some families they acquire them late. In other families one child may have an early eruption schedule and another a late one. Further investigation regarding the factors associated with the time of tooth eruption is needed.

Dental Caries. Tooth decay is a serious problem in the United States. Relatively few children escape it in some degree. The wide scope of this

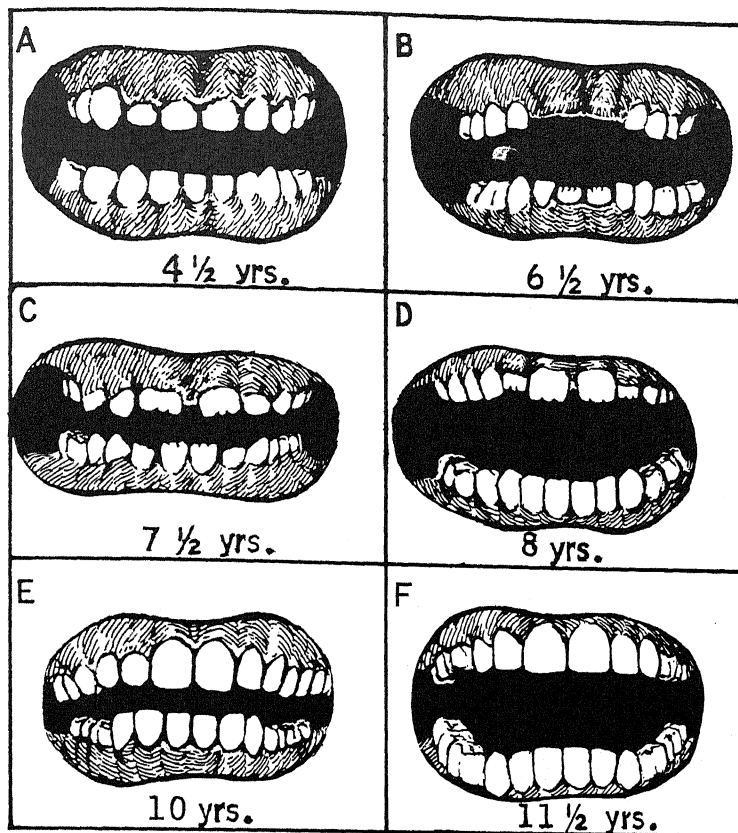



FIGURE 45. Illustrations of the front teeth of a child showing normal transition from deciduous to permanent dentition: *A*. At about 4½ years of age, showing spacing of deciduous teeth. *B*. At about 6½ years of age, showing loss of deciduous central incisors and eruption of lower permanent central incisors. *C*. At about 7½ years of age, showing eruption of permanent lower lateral and upper central incisors, space between and angle of upper central incisors. *D*. At about 8 years of age, showing eruption of permanent upper lateral incisors and beginning of closure of space between upper central incisors. The lower incisors are aligned by the action of tongue and lips. *E*. At about 10 years of age, showing further eruption of upper lateral incisors and closing of space between upper central incisors. *F*. At about 11½ years of age, showing eruption of permanent cuspids, and correction of the angle of the incisor teeth. (Adapted from Schour, I., and Massler, M.: The Development of the Human Dentition. Journal of the American Dental Association, 28:1158, 1941.)

disease has been indicated by surveys in various parts of the country. Finn (1952), in summarizing the prevalence of dental caries, states that in a survey of children 25 per cent of 6 year olds had some caries and 97.8 per cent of 14 year olds had carious teeth. These surveys show that the incidence increases with age. Dental decay attacks the rich and the poor alike (Klein and Palmer, 1942). It tends to run in families (Paynter and Grainger, 1961). American Negroes tend to have less tooth decay than whites (Hill, 1957). Girls tend to have more permanent teeth affected than boys (Toverud, 1957). Some communities have more caries among their population than others. The lower incidence is associated with the presence of minute amounts of fluorides in the water (Ast, 1956).

TABLE 1. *Deciduous Teeth: Their Calcification, Eruption and Shedding**

	CALCIFICATION		ERUPTION		SHEDDING	
	BEGINS AT	COMPLETED	MAXILLARY	MANDIBULAR	MAXILLARY	MANDIBULAR
Central incisors	5 fetal month	18-24 months	6-8 months	5-7 months	7-8 years	6-7 years
Lateral incisors	5 fetal month	18-24 months	8-11 months	7-10 months	8-9 years	7-8 years
Cuspids	6 fetal month	30-36 months	16-20 months	16-20 months	11-12 years	9-11 years
First molars	5 fetal month	24-30 months	10-16 months	10-16 months	10-11 years	10-12 years
Second molars	6 fetal month	36 months	20-30 months	20-30 months	10-12 years	11-13 years

*From Nelson, W. E. (ed.): Textbook of Pediatrics. 8th ed. Philadelphia, W. B. Saunders Co., 1964. Data adapted from chart prepared by P. K. Losch, who carried out roentgenographic assays of the jaws of 1000 children in metropolitan Boston in 1942 at the Harvard School of Dental Medicine.

Dental decay begins at the outer edge of the enamel and progresses inward. It is the result of the interaction of four known factors: namely, (1) a tooth's inherent degree of proneness to decay; (2) microorganisms and their metabolic products in the mouth; (3) carbohydrate in food debris which becomes entrapped on caries-susceptible surfaces; and (4) the quantity and the physical and chemical composition of saliva. Possibly there are other unidentified contributing factors. Tooth susceptibility to caries depends upon the physical form, the structure and the chemical composition of the tooth, qualities which are the result of genetic and nutritional influences operating during the growth and maturation of the tooth. Acid-forming bacteria in the mouth convert the carbohydrate, especially sugars, into acid which, in turn, produces the decalcification of the tooth. Bacteria may also act upon the protein substance of the tooth and thereby cause disintegration. It seems probable that both bacterial actions are involved (Leicester, 1954). The saliva plays a role by providing fluid and chemicals which take part in reactions in the mouth. Thus, both systemic and oral conditions contribute to the development of dental caries (Shaw, 1958; Turner, 1960).

Various measures for the prevention and control of dental caries, which have been substantiated by experimental evidence, are advocated. These include a well-balanced diet with emphasis on protective foods during the years when teeth are developing, limitation of carbohydrates, especially sugars, limitation of carbohydrates in forms that adhere to the teeth, limitation of the length of time the teeth are exposed to sugar, and provision of small amounts of fluorides either in drinking water or topically applied to the teeth.

One study found that eating sticky candy, e.g. caramels, was followed by an increase in caries, while a sugar

solution or chocolate bars effected no change. Increase was greater when the candy was eaten between meals. The length of time of exposure of teeth to sugar will be greater when eating hard candy than when taking a sweet drink and also when sweets are eaten between meals as well as at mealtime. Differences in the length of time of the exposure to sugars, as well as differences in consistencies of carbohydrates, may account for some of the variability in the results of studies on the relationship between sugar and dental caries.

Reduction in dental caries following the addition of small amounts of fluoride to an otherwise fluoride-free water supply has been demonstrated in several communities (Hill, 1958). In one study, after a 10-year experimental period, Newburgh children, who used fluoridated water, had less dental caries than Kingston children, who used fluoride-free water, by a range of 57 to 58 per cent for the 6 to 9 year olds and 41 per cent for the 16 year olds. Kingston children had lost 8 times as many sixth-year molars because of caries as had Newburgh children. No harmful effects on the health of the Newburgh children were noted (Schlesinger, 1956).

As can be seen from the above, food habits are important in the prevention of dental caries. This is borne out by observation of the lower incidence of caries in primitive people. When their natural diets are replaced largely by refined foods, including sugar, the incidence of caries increases. Studies of institutional children have shown that they have less tooth decay than children living in their own homes. The food habits of these children, including foods eaten, lack of sweets and soft drinks between meals, may have been a contributing factor. Studies of dental caries before, during and after World War II showed a decrease in caries during the war, with a subsequent increase later in the 1950's (Mellenby, 1957). During the war, changes in food habits were necessitated by food shortages and consequent rationing. In the countries in which the studies on caries were made, rationing was planned to meet the nutritional needs of the people.

Providing a well-balanced diet and reducing the intake of candy, ice cream and other sweets, especially between meals, can, therefore, be a preventive measure. Adequate care of the teeth, including regular visits to the dentist and regular brushing, will provide additional protection. Brushing of the teeth will not assure freedom from decay, but it will remove particles adhering to teeth, help to keep them clean and also may improve blood circulation in the tissues around the teeth. One study demonstrated that regular and vigorous brushing of the teeth after taking any food, or if brushing were not possible, thorough rinsing of the mouth with water resulted in a reduction of caries. Experiments using a dentifrice containing stannous fluoride have demonstrated some effect on the reduction of caries (Jordan and Peterson, 1959).

Jaw Development. The development of the jaws is closely associated with that of the teeth. Growth is accelerated while both the deciduous and the permanent teeth are developing and erupting. During the time of deciduous dentition (the first 3 years), the pattern of the face is being established. After that time change in the face consists more or less of a proportionate increase in size rather than any marked change in proportions. Growth of the jaws may be adequate or inadequate to allow for the proper placement of the teeth. If this growth at any time is inadequate, the teeth may not erupt, may appear in an unusual order or may force their way into too small a space, resulting in crowding or irregular alignment. If a jaw grows more

than is needed to accommodate the teeth, wide spaces between the teeth will result.

The normal growth of a face is orderly and symmetrical. Occasionally, however, the teeth of the two jaws do not fit together properly; such a condition is designated malocclusion. This can be due to the fact that one jaw grows more rapidly than the other, or it may result from disharmonious growth of jaw and teeth. Figure 46 shows good occlusion on the left, malocclusion on the right.

Irregularities may be of the types that correct themselves during development, such as the normal sequence of the position of the teeth during the "Ugly Duckling stage"; they may be within the range of normal variation and thus not interfere with the function of the teeth; they may grow steadily worse. As in all aspects of growth, there are individual differences in the pattern of growth of children's jaws (Sillman, 1951). It is advisable, therefore, that beginning around 3 years of age the development of the teeth and jaws be watched carefully at regular intervals by a dentist who understands the developmental process. Such regular examinations will make it possible to follow the child's development and make regular appraisal of dentofacial growth as a part of the "whole child." Sometimes it is necessary to assist nature by applying pressure through orthodontic appliances. The jaw of the child is quite plastic, which makes adjustment possible.

Good or poor occlusion is believed to be produced by the interplay of heredity and environment, with heredity being a very strong component (Krogman, 1958). Contributing factors in poor occlusion may include premature loss of deciduous teeth, congenital absence of teeth and thumbsucking. A serial study of a group of children from birth to 14 years of age showed that thumb sucking tended to affect those with poor bites but had little or no effect on those with good bites. Spontaneous correction has been observed after the activity is stopped, even as late as 11 years of age.

The value of well-developed, symmetrical jaws and teeth of good quality and good appearance is immeasurable in the school years and in adulthood. Such a condition contributes to the physical and mental health of the child and adult. The ability to chew well and the absence of centers of infection aid in maintaining physical health. An attractive set of teeth and good facial contour increase one's self-confidence, and the proper alignment of teeth contributes to satisfactory speech.

The development of the jaws is stimulated by exercise; namely, suck-

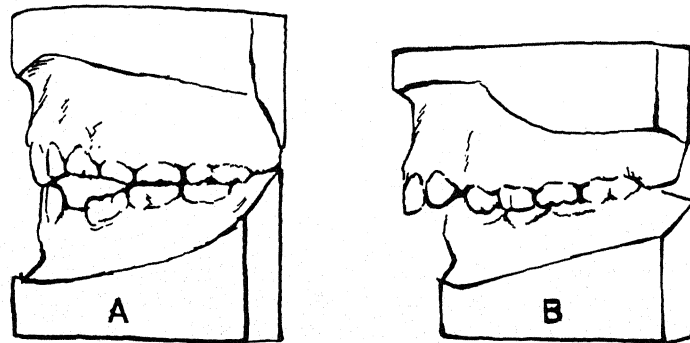



FIGURE 46. Impression of teeth of 2 six year olds showing (*A*) good occlusion and (*B*) malocclusion.

into men's shoes before he goes into men's trousers.

The arches of the foot are well developed at a relatively early age, before 5 years, and the height of the arch varies considerably from child to child. Genetic factors seem to determine the height of the arch. More information is necessary before judgment can be made about the relative value of high or low arches in resisting the strains of life.

Muscles. Muscles, in conjunction with nerves, are responsible for all bodily movements, voluntary and involuntary. Attached to the skeleton and activated by nerves, they make it possible for man to maintain an upright position, to change that position and to control his environment through manipulation.

Muscles are also involved in the movement of the organs of the body, movements which, for the most part, are unnoticed but which, nevertheless, are necessary for life. Thus, we breathe, the heart beats, food is digested, and waste is eliminated. Eliminative activities change in the young child from involuntary acts to acts controlled by the will. The muscles of the eye operate to produce binocular vision and depth perception. Facial muscles, attached to the skin, make the face mobile and give it the ability to respond to the outside world and, in turn, give some clue to others in solving the human equation. Speech also owes its existence to the functioning of the muscles of the face and throat.

Muscles play a necessary part in maintaining body balance. Attached to the bones by tendons (tough, fibrous material), they hold the various parts of the skeleton in place. The changes which take place in balance as children grow can be attributed, in part at least, to the activity of various muscle groups. Body balance, good or poor, is dependent upon the quality of the muscles and their function. Thus, muscle tone, that state of readiness to act, contributes to the mechanics of the body. The intimate relationship of bone and muscle makes it possible for muscles to contribute to the growth of the skeleton. This is particularly noticeable in the face, where the muscles used in mastication play a part in molding the jaw and in stimulating circulation.

Muscles increase in weight about forty times from birth to maturity. At birth they constitute about one-fifth to one-fourth of the body's weight; in early adolescence, about one-third; and in early maturity, about two-fifths. During the school years considerable muscle growth takes place. It lags behind growth in size but compensates for this lag later. An adolescent, therefore, who is fully grown in height and in sexual characteristics is not necessarily fully grown muscularly. This has implications for adult expectations for adolescents and in planning programs for them.

After birth, muscles grow in size not by acquiring new muscle fibers but by increase in length, breadth and thickness of the fibers. The muscles also change in composition with age and become more firmly attached to bones. They gradually come under voluntary control. The immaturity of the muscles and their innervation are reflected in awkwardness and inefficiency in movement in young children, in the erratic change of tempo of movement, in inability to sit still for long, as noticed in young elementary school children, and in their fatigability. Small children tend to tire more easily than adults but also recover more rapidly. Thus, frequent rest periods and changes in activity throughout the day's program are advisable during

childhood in order to bring different muscle groups into play and thereby relieve fatigue.

Children differ in their muscle equipment and efficiency. Boys generally are more muscular than girls. Some children have muscles that fatigue especially easily. Muscular differences of children are worthy of consideration in planning programs in the schools. The same child may differ in his muscular abilities at different times. After illness a child's muscle tone is generally lowered. More rest and less strenuous activity during the convalescent period, which usually extends beyond his return to school, will give his muscles an opportunity to recuperate from the effects of the illness and the period of inactivity necessitated by it.

Muscles respond readily to good physical care, including food, rest and activity. The fitness of muscles depends upon their structure, plus the use that is made of them. Good development of muscles and nerves provides potentialities for increasing steadiness of movement, speed and accuracy, strength and endurance during the growing years. Thus, a child as he matures and practices his emerging abilities can acquire strength, efficiency and grace of movement.

Strength. Strength, as measured by grip, pull-up and thrust, has been shown to increase with age even during the early adolescent period of rapid growth in size. It increases with changing tempo and differs in its patterns of growth. While boys are somewhat stronger than girls, both make similar progress until about 13 years, after which boys increase their rate of growth in strength while girls decrease their rate. Thus, the sex difference becomes pronounced. Although boys are stronger than girls, there is a fairly even progress for both sexes until about 11. After puberty the rate of increase for boys greatly exceeds that for girls. For boys the beginning of the spurt of growth in strength comes about the time they reach a skeletal age of 14 years and generally lags behind the spurt in height and weight. The peak of the spurt of growth in strength comes about 1½ years after that in height and 1 year after that in weight (Stolz, 1951). Growth in strength continues into the third decade.

Girls generally have their spurt of growth in strength in the year preceding menarche. By 13 their growth in strength is slowing down very appreciably. By 16 years of age practically all boys are superior to the average girl. As in other phases of growth, girls mature earlier than boys and, thus, at the same chronological age girls are farther advanced toward their terminal strength than boys. For example, at 13 years boys have reached approximately 45 per cent of their terminal strength in pull and thrust; girls have reached 75 per cent in pull and 90 per cent in thrust. Jones (1949) concludes that the evidence regarding sex differences indicates that these differences in strength have primarily a biological basis, but, in addition, cultural expectations operate to increase motivation and practice in boys and diminish it in girls.

During the adolescent growth period early maturing individuals are generally superior in strength to the later maturers (Stuart and Prugh, 1962). This is most marked in boys around 14½ and girls at 13 years of age. The superiority of early maturing boys continues into later adolescence; this does not hold for girls. Early maturing girls tend to drop below the average maturing group. The lag in the puberal spurt of strength behind that of other physical measurements is

more noticeable for the early than for the late maturers. The late maturers in the California Adolescent Study tended to be "as strong as they looked"; the early maturers were not so strong as their size implied. Jones (1949), in commenting on this, points out that while the late maturing boys, with their slower pattern of growth, may have a more closely synchronized physical development and thus escape some of the strains incident to rapid growth, the early maturing boys, with their rapid and in some ways less well-integrated growth, often gain an early advantage in athletic competition and in associated prestige.

Children may vary in strength because of differences in physique. Obesity affects physical performance during the junior high school age. In the 50-yard dash, standing broad jump, and soft ball throw for distance, children of medium physique and normal development were the best performers. Subjects of heavy physique (many overweight) were the poorest performers (Wear and Miller, 1962). The relationship of physique and strength has been mentioned earlier in the chapter. Some children are consistently strong or weak from 11 to 17; some reach maturity stronger, some weaker. A strength score at 11 is not necessarily a good indication of strength at maturity. Motor coordination and motor performance will be discussed in Chapter 8.

Posture. Posture, or body balance, is the relative arrangement or position of the various parts of the body. This arrangement of parts can be such that the body can function effectively without stress or strain, and movement be easy and graceful; or the relationship can be such that there is unnecessary wear and tear, thus lowering efficiency and inducing unnecessary fatigue. Posture is not static and fixed but rather dynamic and fluid. It varies according to the activity of the moment or circumstances of the individual. A child has a posture for sitting, another for standing, for walking, for running—in fact, for all the myriad activities that are part of his daily living.

Posture is a part of the whole organism affecting, and in turn being affected by, separate parts of the body. Posture often reflects the health of a child. Good posture is likely to be a characteristic of a healthy, vigorous child; poor posture may indicate lack of physical vigor. It may reflect his attitude toward himself, toward people, toward life in general. The child who feels inadequate gives himself away by his posture just as the happy, enthusiastic child expresses his joy and enthusiasm through his body. Inner tensions may be revealed by the way a child sits or uses his hands or by his movements.

FACTORS INFLUENCING POSTURE. A multiplicity of factors within and outside of the child, both physical and psychological contribute to his postural patterns. Among these are the constant pull of gravity, his genetic constitution, especially physique, growth and development, and the many aspects of the environment.

The force of gravity operates constantly. As has been said by Davies (1958), all children wage a battle against the pull of gravity. This is obvious for some and not so obvious for others. The child as he sits is affected one way; as he stands, another; as he runs, in yet another. Gravity is one of the forces against which equilibrium must be maintained, and equilibrium is the crux of the problem in good balance. "The well-balanced individual 'rolls with the blow' but has sufficient resiliency and stability to gain equilibrium without much delay or difficulty." This equilibrium is achieved as a part of growing up.

The kind of body structure that is inherited is yet another factor. Posture will differ according to build. The predominantly mesomorphic child will

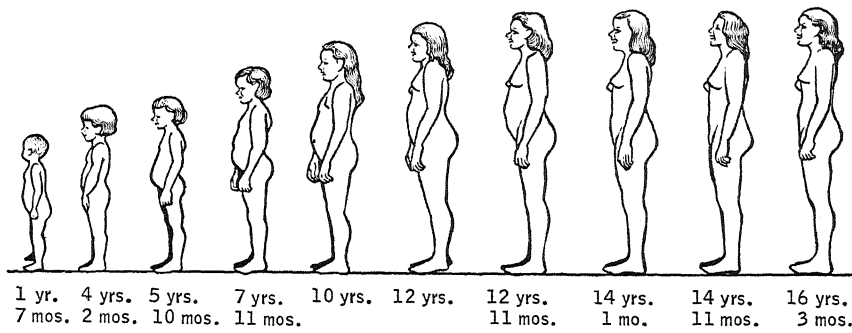



FIGURE 47. The posture of a child from one year, seven months to sixteen years, three months, showing changes in body balance accompanying growth.

have different postural patterns from one with a predominantly endomorphic or ectomorphic build. Some children because of their body structures will have certain limitations in achieving all-round good body balance as, for example, those with physical defects. Strong bones, firm muscles and kinesthetic perception contribute to maintaining good posture.

Body balance changes as the child grows (Fig. 47). The baby begins while lying on his back or stomach to "unroll" the "coiling" which has been his intra-uterine position. He first learns to balance his head, then to sit erect, to stand and, finally, to walk. Back curves appear concurrently with this progress. The first curve in the neck region appears when he holds his head erect; the lumbar curve in the lower part of the back gradually develops with standing and walking.

When a baby is learning to stand, he is very unstable and his instability continues into the preschool years. Every baby has bowing of the legs, which, all other factors being equal, straightens in due time after he begins to walk. The toddler has knock-knees and some degree of pronation,* a prominent abdomen and, in proportion to the prominence of the abdomen, a lumbar lordosis (exaggerated lumbar curve). The prominent abdomen and lumbar lordosis can be expected to continue through the preschool and school years. Knock-knees and pronation gradually decrease. Kendall et al. (1952) say that the condition of the knees and feet improves by 6 or 7; the protrusion of the abdomen changes noticeably at about 10 or 12. Prominence of the shoulder blades seems to be typical of children around 8 years of age. Phelps et al. (1956) point out the great flexibility of the 6 to 10 year olds and their increased general activity, which is a very necessary part of their development.

The ability to bend over and touch toes while knees are straight is simple for the young child and easy for the later adolescent but, between 11 and 15, many children who have no evidence of muscle or joint tightness cannot achieve this. The relatively greater length of the legs at this age is suggested as the possible cause.

In the adolescent period tendencies which have begun earlier tend to become fixed and thus the characteristics of the adult posture appear. The abdomen flattens. The typical dorsal and lumbar curves emerge. The pelvis is tilted slightly upward in the front and downward in the back instead of for-

*Pronation refers to a position of the foot in which the weight in standing is borne heavily on the inner side of the foot, resulting in prominence and sagging of the foot in the area of the ankle; the heel is tilted outwards.

ward as in earlier ages. These changes can be noted in Figure 47.

Adolescents present marked differences in their postural patterns, both in activity and in repose. They may be graceful when active yet awkward in repose; they may be awkward in action. Some acquire good postural habits, some poor habits. Many factors may contribute to these differences. The generalized type of preadolescent interest has often changed to concentration of interest in one or a few activities. The spurt of growth varies in its intensity. It was pointed out earlier that a fast-growing individual tends to have a relatively longer lag between development in size and in strength than one growing at a slower rate. A fast-growing individual may not, therefore, be muscularly strong. Footprints may show a temporary sagging of the muscles of the foot. Fast-growing children may fatigue easily, and faulty posture may result from this fatigue. A boy or girl may be self-conscious about some aspect of his or her body and reflect discomfort in posture. All these conditions may be temporary or they may lead to permanent postural habits. On the other hand, there are many incentives to acquiring good balance. The desire to excel in sports, to be physically attractive and to perfect the motor abilities which contribute to social success all motivate the adolescent to learn good body balance. This period, therefore, is very important and is the strategic time, both physically and psychologically, to emphasize postural correction and to teach the principles of good adult posture (Phelps, 1956).

Postural defects may occur any time during development. They may be due to an exaggeration of posture typical of a developmental stage, to a failure to outgrow a particular stage as, for example, pronation, which is natural for a young child but which should be outgrown, or to persistently poor postural habits. Early recognition and treatment are important because of the greater plasticity of the bones of younger children and because the poor postural habits have not had time to become firmly established.

HOME AND SCHOOL INFLUENCES

Children's Concepts of the Human Body. In a study of developmental trends in children's educations about the content and functioning of their interiors, 96 boys and girls, most of them pediatric patients ranging in age from 4 to 16 years, it was found that a large proportion of their ideas had been culturally derived. However, only selected information seemed to be assimilated by the subjects of the study. The children often referred to inferences derived from personal sensations, observations, and manipulation of body parts. At all ages references to magical, mystical and animalistic concepts were rarely reported. There was a marked improvement in the quantity and quality of statements made concerning bodily content and functioning at about age 9 years (Gelbert, 1962). Home and school provide the environment in which a child spends most of his time and in which he has many experiences that contribute to the building of a sound healthy body and good postural habits. It is here that he is protected from or exposed to illnesses, that he eats, sleeps, relaxes, works, is provided with clothing, has opportunities for a diversity of play activities and interests and acquires his mental attitudes and habits. All of these influence his postural habits in some manner. Most of these factors have been discussed elsewhere in this book. It will suffice to mention a few. Clothing today is generally nonrestricting and allows freedom of movement. How-

ever, shoes and stockings may affect foot posture.

It is believed that many of the numerous foot defects of adults can be traced to improper shoes or stockings worn during childhood. Foot defects in children can often be traced to outgrown shoes. A good shoe fits the foot properly in length and width. It is flexible to allow movement of the foot but firm enough to serve as a support when walking on hard surfaces. Stockings frequently become too short for children because of shrinkage and because of rapid growth of the foot at certain ages.

Sleeping and working conditions need to be evaluated in terms of their possible effect upon posture. Beds of ample length, firm, flat mattresses, light and nonrestricting bedclothes contribute to good posture as well as good sleep. Desks and chairs that fit the child can be provided so that his feet are flat on the floor, knees are at a right angle, back is supported by the back of the chair, and the distance of the desk from the chair is such that he can lean forward from the hips when working. A desk with the top about on a level with his elbows when he sits erect and slightly tilted provides a comfortable work surface. Comfortable chairs of the correct size and construction will encourage good sitting habits. Lighting can be so placed in relation to desk and chair that he can see his work without distortion of his posture.

Adults' Role in Aiding Good Body Balance. Since good body balance is learned and some factors in life aid while others hinder a child's progress, adults have a responsibility in setting the stage for the child. It is the parents who see that the environment in the home makes it possible for the child to practice good body balance. His bed, his chair at the table, the place where he reads and works are set for him. In the early years parents are responsible for his clothing. They are the ones who watch to see that he has not outgrown his clothes, that they fit properly. Later, as he becomes more independent, his own selection is influenced, in part at least, by the standards set up by his family. He learns his postural habits in his family. Here he unconsciously acquires his way of manipulating his body in all kinds of activities, from doing the daily chores to playing. He also imitates mannerisms of sitting, standing, walking, and so forth, of others in the family.

Parents can become aware of early tendencies by careful observation. The child can be watched in action and in repose. Parents also can provide regular physical examinations by a doctor who will watch for the beginnings of postural difficulties. For example, early recognition of inequality of leg length may prevent a permanent scoliosis. Cramped toes or red spots on the feet may indicate improper fitting of shoes or stockings. Parents under the guidance of a physician also can see that early physical defects are prevented or corrected as far as possible.

Parents can create the right attitude toward posture. To do so they need to have the right concept of posture. Good balance cannot be achieved by emphasizing one part of the body to the exclusion of others. Frequent reminders to "put your shoulders back" or "sit up straight" do more harm than good. Children either resent them or become too self-conscious. For most young children good diet, sleep, a variety of activities and a happy atmosphere are all that is needed. Later on, children may need instruction in body balance to improve their posture. The point of attack will depend upon the interests of the particular child.

Parents may also cooperate with the school in its endeavor to protect their children's health and thus promote good posture. An appreciation of the school program and a willingness to

reinforce the practices of the school at home make for success.

The school has a parallel role with that of the parents. The planning of the environment and the program in terms of the school's contribution to learning good postural habits is important. Lighting, seating, ventilation and work materials can be planned to eliminate unnecessary fatigue and permit the practice of good postural habits. The program can be planned to minimize fatigue by frequent changes in activities, frequent opportunities to move about and the elimination, as far as possible, of noise and confusion. The atmosphere can be friendly, healthy, free of tensions. Teachers can watch for divergencies in posture through formal and informal observations. The school can contribute further to the development of good postural habits by providing (1) a program of health protection and prevention of early defects and (2) a well-balanced physical education program planned according to the child's stage of development and flexible enough to meet the differing needs of individual children to learn to control their bodies and to use them in the easy rather than the hard way. Here, as at home, the attitude of the adults toward posture will do much toward creating a satisfactory attitude in children.

ORGANS AND FUNCTIONS

Pertinent Facts. As the body grows, new functions develop and old ones are extended. The heart beats more strongly, more slowly and more regularly; respiration becomes slower, deeper and more regular; food takes longer to pass through the digestive tract and digestion is not so easily disturbed; the bladder can retain urine longer; body temperature becomes more stable; the composition of the blood remains more nearly constant (Tanner, 1962). Because of this increase in efficiency and in homeostasis, older children and adults can adjust to changes in environment and in routines more easily than young children. In the early school years children acquire considerable physiological stability so that they can adjust to reasonable changes in temperature; their temperatures gain more stability in response to emotional and digestive disturbances. Periods of work and play gradually become longer without inducing fatigue. The foods which were given sparingly in the early years are now part of the regular diet.

Individuality in bodily functions and in the chemical activities underlying development and function is as apparent as that in physical growth. Healthy children differ in many ways as, for example, in their use of nutrients, in levels of blood constituents, in blood pressure, in the amount of energy needed for internal housekeeping. Many of the varied individual differences are being revealed in longitudinal studies. For example, at the Denver Research Council (Gray, 1953) among the differences observed the one relative to the amount of globulins in the blood (associated with bodily mechanisms for fighting disease) has interesting implications. Some children had higher levels of globulin than others. Those with high levels also tended to have larger tonsils, larger adenoids and more lymph glands. This raises the question of whether these differences in levels of globulin and in the amount of lymph tissue help to explain why children differ in their resistance to colds and other respiratory diseases. Such examples as well as the documentation of individual differences in structures and functions by Williams (1956) indicate the importance of recognizing variability in functional areas as well as in growth among healthy children.

The ears and eyes are such valuable

assets in an individual's life that protection of them at all ages is important. The *ear* is well developed at birth. The inner and middle ear have practically reached their adult size by the time the child is born. In the young child the eustachian tube, which connects the ear with the throat, is short, wide and straight, affording a relatively easy passage for bacteria from the throat to the ear. This may account, in part, for the higher incidence of ear infections in young children than in later years. All necessary precautions should be taken in childhood to prevent ear infections, which often lead to the impairment of hearing.

The *eye* continues to develop throughout the growing years. As the eyeball grows the sight of the child changes from the farsightedness of young children toward nearsightedness (myopia), with a rapid rate of change taking place during pubescence. Binocular vision (single vision with depth perception) is slowly developed, often with temporary setbacks, up to the age of 6 or 8. Many individuals never do achieve this high degree of vision (Burch, 1959). When binocular vision does not develop the child is deprived of accurate depth perception, which interferes with his judgment of distances. The health of the eyes is related to the general health of the child, to nutrition, to environment (Chap. 5) and to the use of the eyes in health and in illness. Children need larger print than adults, and frequent relief from close work, as we shall see in Chapter 9.

The *heart* grows rapidly until the fourth year, relatively slowly until about the tenth year, after which the rate of growth increases again, reaching a peak in gains about the time of the greatest gain in weight. The lag in rate behind that of body size during preteen years does not mean that children have to be protected against vigorous activities, but it does add to the other reasons, including the pattern of growth in strength, for protecting children of these ages against the pressures of competitive sports (Logan, 1958; Reichert, 1958). Players in the final competition of the Little League of Baseball have been demonstrated to be biologically older than their peers (Krogman, 1959).

The pattern of growth of the *nervous system,* in terms of weight, has been discussed in Chapter 1. We shall not attempt to discuss its anatomy and physiology here since we believe that it is more profitable at the present time for students in child development to approach the study of the nervous system through the observation and interpretation of children's behavior. The reader is, therefore, referred to the chapters dealing with motor and intellectual development.

Reproductive System. The reproductive organs, which are immature at birth and remain so during the early years, have most of their growth during the school years, as we saw in Chapter 1, beginning somewhere around 10 years of age, and reach maturity when reproduction is possible. Active, mature spermatozoa are not usually found until 15 or 16 years; conception is uncommon before 16 years (Stuart and Stevenson, 1959). Sex differences are well established at birth, and all during development these differences are noticed both in appearance and in developmental progress. The most important differences are the so-called sex characteristics: the primary sex characteristics which have to do with the reproductive organs themselves, and the secondary sex characteristics such as the distribution of hair, contour of hips, depth of voice and size of breasts. The role played by the endocrine glands in influencing the development of the reproductive system has been discussed in Chapter 2.

Boys and girls differ in the age at which the body changes characteristic

of approaching sexual maturity begin. These changes begin later for boys than for girls, as shown in Figure 48. There is also wide individual variability. Pubescence generally begins some time between 9 and 17. The sequence of events is generally consistent; the timing of these events is variable. Note the differences in the development of the three 14 year old boys in Figure 37.

For the *boy* the sequence of the appearance of external sexual characteristics begins with the growth of the testes, followed by that of the penis, which event is synchronized with the acceleration in growth in height (Reynolds, 1951). The first appearance of pubic hair occurs at the onset of the growth of the testes for some and follows the beginning of accelerated genitalia growth for others. Axillary hair follows pubic hair, after the latter is well developed, and, in turn, is followed by facial hair. The "masculine" pubic hair contour, diamond shaped with hair extending up on the abdomen, appears toward the end of adolescence. Hair on other parts of the body appears generally in adulthood

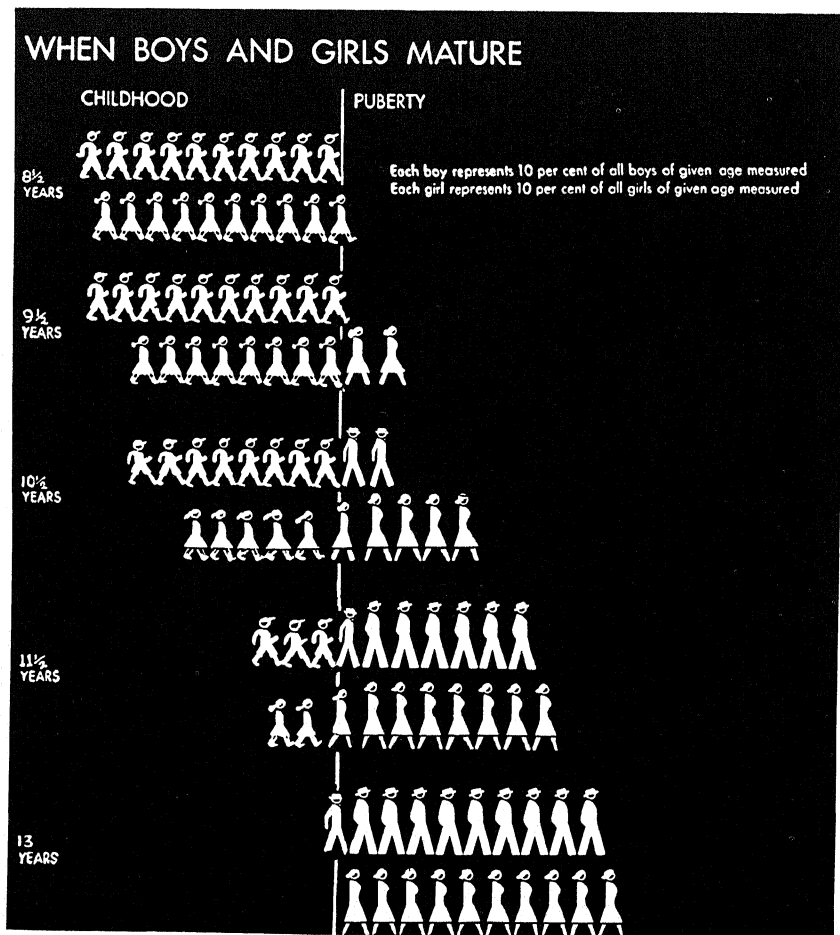



FIGURE 48. When boys and girls begin to mature. First stage in sexual maturation is indicated by enlargement, first reddening and texture change of scrotum in boys and first breast changes in girls. Girls are ahead of boys. Both boys and girls vary among themselves. (Taken from Reynolds, E. L., and Wine, S. J. V. Am. J. Dis. Child., 75:337, 1948, and Am. J. Dis. Child., 82:533, 1951.)

and varies widely in degree and location.

In one study the onset of growth of the testes began anywhere from 10 to 13 years (mean age 11.8 ± .78 years) and their accelerated growth was completed from about 14½ to 18 years (mean age 16.4 ± .88 years) (Stolz, 1951). On the average it took 4½ years to complete their development. During this interval, growth of the penis and development of pubic hair is completed. The first ejaculation of semen, which does not generally contain mature sperm (Ford and Beach, 1951), occurs about a year after the beginning of accelerated growth of the penis (Tanner, 1962) or, according to Kinsey (1948), in the fourteenth year. Mature sperm do not appear until 15 or 16 years (average age 15 years with a range of 11¼ to 17 years).

Increased secretion of sweat glands, with characteristic odor, generally appears concurrently with axillary hair. Perceptible deepening of the voice due to growth of the larynx is noticed near the completion of penis growth. The deeper tones of the mature male generally do not appear before the fifthteenth year (Stuart, 1958).

The breasts of boys undergo changes, some temporary, some permanent. In some there is a distinct enlargement which occurs midway in adolescence and lasts for about a year to 18 months, after which the enlargement disappears.

Maturity for boys, or the ability to reproduce, probably is reached when general growth has slowed down, most of the epiphyses and diaphyses of the bones have fused and all secondary sex characteristics are well advanced, probably after 16 years of age.

A knowledge of the sequence of these phases of growth as well as his changing size and an understanding of his own particular pattern will help a boy to accept himself and probably will alleviate his concern if he is one of those who mature late.

In *girls* the first noticeable step in sexual maturation is breast development. At the same time that breasts have begun to develop the hips are widening due to widening of the pelvis and an increase in fat over the hips. About the same time, or a little later, pubic hair appears (Nicolson, 1953). The estrogen cycle becomes established. Vaginal changes take place and its secretion changes from alkaline to acid. Axillary hair appears during the latter half of the year following the appearance of pubic hair. Menarche generally occurs concurrently with axillary hair, when breasts are fairly well developed, after pigmented curly hair is present in moderate amounts, and after the spurt in height has reached its apex (Stuart, 1959). The maturational changes up to and through menarche, according to one study, take a little over 5 years. In this study the average age in years for the beginning of breast development was 10.6 ± 1.2; for the terminal stage, 13.9 ± .09; for the first appearance of pubic hair, 11.6 ± 0.9; and for menarche, 12.8 ± 1.1 years.

The average age of menarche in the United States today is 12.5 to 13 years; in 1900 it was 14 years (Tanner, 1962). In Assam it is 13.21 ± 0.11 years; in Burma 13.25 ± .08 years; in Urban West Bengal it is 12.5 to 13.0 years (Mukherji and Sengupta, 1962). In Holland it is 13.67 years (Rusback et al., 1961). In India it is 13.4 years for this generation; it was 13.59 for the previous generation (Isreal, 1959). In Italy it is 12.5 years, the trend being toward earlier ages in girls of families which have moved upward in the socioeconomic scale during the past thirty years (Boutourlene Young, 1963). In Southern and Northern Nigeria, it is 14.4 years (Foll, 1961). We might speculate that a possible explanation of these differences may be differences in nutrition and health. In any case, earlier menarche is accompanied by increased height and weight

over the changes reported three or four decades ago (Tanner, 1962).

Individual differences in the timing of the menarche here and in other parts of the world may be affected not only by socioeconomic factors but by other factors such as endocrine and genetic factors.

During the first year after the menarche the frequency or irregularity of the cycle is greater than it is after that time. The frequency of dysmenorrhea (painful menstruation) increases from about 6 per cent of girls in the first year after the menarche to about 30 per cent in the fifth year (Van Lear et al., 1962). If girls understand that this irregularity may occur for a time, possible fears and anxieties may be allayed in girls who may consider themselves abnormal because their menstrual cycle does not follow the proverbial 28-day period. Also, girls need to understand that they may differ one from another in their pattern of regularity and length of period.

Early maturing girls have the menarche at an earlier skeletal age than do average girls, even though the skeletal age is accelerated over the chronological age (Hansman and Maresh, 1961). These authors also found that there was no correlation with the average age of menarche in their mothers.

Level of physical maturity is not a single factor in determining a girl's status in the peer group, but it is an important part of a composite of factors creating a girl's reputation during adolescence (Faust, 1960).

Postmenarchal Growth in Height. The height records of 408 girls of known age at menarche showed the mode of increased height after menarche was 2.5 inches. Seventeen per cent of these girls grew more than 4 inches after menarche (Fried and Smith, 1962).

Menarche does not mean the achievement of sexual maturity. For most girls menstruation begins before the ovaries are capable of producing ripe ova. Ovulation tends to occur before the uterus is sufficiently mature to support pregnancy (Ford and Beach, 1951). Thus, conception seems to be an unlikely possibility for a time following this event. There, is, rather, a period of adolescent sterility for most, the length of which varies with individuals (Montague, 1957). Generally, maturity is not reached before 16. Menarche is, therefore, one of the maturity indicators of the reproductive system, a landmark along the way to becoming an adult woman. Since menarche is an indicator of approaching maturity, those who look forward to becoming grown up may welcome it, while those who are not ready psychologically for what maturity entails may resent it. Family attitudes and cultural backgrounds influence the attitudes of a girl. It is wise for teachers and others who may be teaching and counseling to have a good understanding of the process of sexual maturing and of the social and cultural forces which may have played a role in molding a child's attitudes and feelings about this process. Equipped with these understandings the adult can be helpful in promoting the development of mature individuals.

Summary. Physical growth, as we have seen, is not only growth in height and weight but includes all those changes within the tissues and organs of the body which make it possible for the child to be healthy and to use his body with increasing effectiveness as his life unfolds. The degree of effectiveness achieved is dependent upon the processes of growth and maturation and the quality of body tissues. Good bones, firm muscles and sound organs are invaluable as a basis for a happy, satisfying life.

A knowledge of how children grow, namely, the sequential changes, and the variability in the rate of growth

from time to time and from child to child should give every adult who lives or works with children a basis for understanding the individual child. Thus, the adult can set the stage for the child, fit his activities to his maturity and rate of physical development, remove obstacles to development and provide him with the necessary prerequisites for growth.

EXPERIENCES TO VITALIZE CLASSWORK

1. Look up the meaning of the words puberty, pubescence and adolescence. Check how they are used in the various reference books on child development you have read.
2. The school dentist has asked you to assist in presenting to a group of parents an educational program which will:
   a. Make them aware of the need for better dental care for their children.
   b. Point out factors contributing to poor dental conditions, including dental caries and malocclusion.
   c. Help them in gaining the cooperation of their children in correcting and preventing dental defects.

   What information would you assemble and what methods of presentation would you employ?
3. Observe the posture of children in high school. Have the students ample opportunity for learning good body balance? Discuss this from the point of view of school equipment, of schedule, of the programs for health protection and physical education.
4. Considering the physical development of children of these ages plan a program of games involving physical activity for a group of (*a*) 7 year old boys and girls, (*b*) 13 year old boys, (*c*) 14 year old girls.
5. Have someone in the class go through last year's file of the magazine Today's Health looking for information on physical growth and development and then report to the class.
6. Plan a talk to early adolescent girls, interpreting to them the bodily changes occurring during early adolescence and what these changes mean to them in terms of physical habits and social and emotional adjustments.
7. A teacher of first grade tells you that she is not interested in the physical development of the children in her group because they present no problems. What can you say to her to help her understand the importance of the development of children at this age and the need for her to be aware of the physical well-being of her children?

SELECTED READINGS

Davies, E. A.: The Elementary School Child and His Posture Patterns. New York, Appleton-Century-Crofts, Inc., 1958.

Krogman, W. M.: A Handbook of the Measurement and Interpretation of Height and Weight in the Growing Child. Monogr. XIII (3), by Fayerweather Hall, (E.). Evanston, Ill., Northwestern University, Society for Research in Child Development, Inc., 1950.

Metheny, E.: Body Dynamics. New York, McGraw-Hill Book Co., Inc., 1952. Principles of posture, movement and relaxation for efficiency in work and play.

Ministry of Education and Central Office of Education: Physical Education in the Primary School. Part I. Moving and Growing. London, Her Majesty's Stationery Office, 1952. Motor development of boys and girls, with illustrations.

Murphy, L. B.: The Widening World of Childhood. New York, Basic Books, Inc., 1962. Chapter 7, An Inner Struggle: Conquest of Polio.

Shuttleworth, F. K.: The Adolescent Period: A Graphic Atlas. Monogr. XIV (1), Fayerweather Hall, E. Evanston, Ill., Northwestern University, Society for Research in Child Development, Inc., 1951.

Shuttleworth, F. K.: The Adolescent Period: A Pictorial Atlas. Monogr. XIV (2), Fayerweather Hall. (E.). Evanston, Ill., Northwestern University, Society for Research in Child Development, Inc., 1951.

Tanner, J. M.: Growth at Adolescence. Springfield, Ill., Charles C Thomas, 1955. Physical growth; includes materials on other ages as well as adolescence.

Watson, E. H., and Lowrey, G. H.: Growth and Development of Children. 3rd ed. Chicago, Year Book Publishers, Inc., 1958. Physical development and factors affecting such development.

Importance of Motor Development and Motor Learning. In primitive life control of body coordinations and the acquisition of good motor skills was basic to survival in fending off predatory animals, securing food and finding shelter against the elements. Today highly developed motor skills are less crucial to immediate survival, but they continue to be influential in the social welfare of growing children, as we shall see in Chapter 12, since the social development of preadolescent and adolescent children includes motor skills as an important component. In everyday adult life, too, physical skills are important to smoothness and efficiency of movement in dressing, doing daily household chores, driving a car, building or creating most of the things used and enjoyed in life. For many people fine hand skills provide the means of earning a living; to a diminishing group, physical power and strength provide a living. To everyone of every age joy in the use of the body in sports and games, in social dancing and in out-of-door recreations of many kinds provides a variety of interests and activities which assures relaxation from the accumulated and increasing strains of modern living and also the exercise which is one of the best guarantees of sound health, both mental and physical, not only during childhood but throughout life. In the many books on old age emphasis is placed upon the effect of early, acquired habits of phys-

ical activity in preserving vitality and physical mobility (Steiglitz, 1954). Older people are more likely to continue exercise if they have a love of it from earlier age.

Development of motor abilities is related to the individual's general personal and social adjustment. Control of one's own body can mean the beginning of self-control in general. Having controlled this most obvious part of his environment, control of temper and other emotions are, for most people, easier. Coupled with the aspect of emotional and tension releases obtained by vigorous physical play, the use of physical skills is an aid to self-adjustment and to social adjustment.

Motor skills are complex and involve almost every aspect of the child's psychological status, being ultimately related to perception and intelligence, to previous learning and present motivation, to emotional stability, and to social relationships. In adolescence as well as at other periods of growth, strength and physical fitness status have far-reaching implications for social and emotional development. Actual structural or functional change is only the beginning from which stem social behavior and attitudes toward oneself and others and toward many things which the adolescent feels have value for him (Inhelder, 1962).

The Sequence of Growth. As we saw in Chapter 1, growth is a continuous, predictable process. In order to understand any stage of development one must understand the entire growth cycle. If, for example, one is interested chiefly in the school-age period, one will find in the earlier grades children who are still in the preschool period of development in body, in mind or in some aspect of personality. A few children will be lagging behind their chronological age in all areas of growth. Unless one understands something of the nature of earlier growth, one cannot best help these lagging children to catch up. Again, one must understand the aspects of growth which still lie ahead, or one cannot best prepare children to make the desirably smooth transition from present to future growth stages. We shall, therefore, attempt to trace some of the major areas of growth from the infant period to the early maturity period. Our immediate concern will be with growth in control and use of the body as a whole.

GENERAL BODILY CONTROL

The Young Infant. Perhaps the most conspicuous thing about a newborn baby is the fact that he has, in 9 months of intra-uterine life, grown from two cells which met at conception, into a complex human body able to maintain the major life functions of breathing, moving, eating, digesting and eliminating after separation from the mother's body. He has the impulse to grow and to learn and the mechanisms with which to do both. He has inherited certain bodily and mental qualities; he has already been influenced by the environment of his mother's body for 9 months of important development. He is a complex individual entity, capable of making many complex sensory and motor responses, and, as we shall see later, he has a definite "personality" of his own which affects his mother's response to him.

Perceptual learning, according to Solly and Murphy (1960), precedes the acts which constitute motor learning. There is motor learning because perceptual learning is going on, defining the possibilities and instigating the changing motor responses. Neural patterns result in learning and memory, and other parameters affect motor learning (Harrison, 1962). Saint Anne-Dargassies (1960), continuing the work of Dr. Andre-Thomas in Paris, refers to

certain obligatory movement patterns of the normal newborn and calls them *primary reflexes*. These include the Moro reflex, the "rooting" reflex, the automatic walking reflex, and others which are present immediately after birth, but are gone by 3 months of age. The movements of the baby's head in response to a touch on the cheek and lips form the most mature of the newborn's behavioral responses (Blauvelt and McKenna, 1961). Some 13 per cent of newborn infants shed tears; about 75 per cent shed them before the end of the first month (Penbharkkul and Karelitz, 1962).

There are wide individual differences in the spontaneous motor activities of young infants. Some sleep quietly, others restlessly (Wold, 1959); infant boys appear to be more vigorous in activity than infant girls (Terman and Tyler, 1954). Isolated movements of hands and arms almost never occur from 3 to 4 weeks to 2½ to 3 months (Kistyakovskaya, 1962).

Whatever the differences in findings about the infant's reflex repertory, there seems general agreement that mouthing and sucking and general bodily activity are fundamentally important motor responses in newborns and young infants (Kessen et al., 1963).

Learning Use of the Body. One of the most interesting of the learning patterns to follow is the achievement of general bodily control which leads to upright walking and the later skills which use the entire body. From the beginning of random, jerking, uncoordinated movements the infant gradually picks out those which prove satisfying and useful (Sturgis, 1957).

In general, control proceeds from control of the whole body to control of the various parts, from the less well differentiated to the finer movements. It also proceeds from head and neck through the torso and into control of arms and legs. Newborn babies have little general muscular control. Even a 3 month old baby needs his back and head supported while being carried or handled. However, within the first few weeks most babies learn to pick up their heads if placed on a flat surface face downward. The lift will be wobbly and temporary, control of the neck muscles being so undeveloped that the head may fall forward with a thump. At 3 to 4 weeks of age, if placed prone on a table, the body tends to remain flexed (Fig. 49, *A*). We see the developmental changes in body and head control in Figure 49, *B, C, D*.

Muscular strength and coordination proceed so rapidly, however, that by 12 to 14 weeks of age most babies, placed face downward on a table, can lift head and chest and, by wriggling the elbows under them, can hold this upward lift for some seconds at a time. The head and neck muscles coordinate well enough by 3 to 4 months that babies, held up so that they can see over one's shoulder, will survey the scene for several minutes on end, only dropping the head occasionally for rest. This head and torso control are good enough by 5 or 6 months to permit most babies to sit upright with comfort if they are supported, and the length of the sitting up periods can be gradually increased as muscular strength improves. Babies become fretful or cry when fatigued and will thus give the sign for change of position and muscular rest.

Sitting with support for short periods is usual for babies of 6 or 7 months. By 9 or 10 months sitting without support for indefinite periods occurs. Most babies can stand with help at 9 months, and nearly all babies can do so by 10 months. (See Fig. 50, *A, B, C, D*.)

Locomotion, or getting from place to place, really begins with the muscular strengthening and controls learned during the first weeks of life. Stretching and pushing of arms and legs are

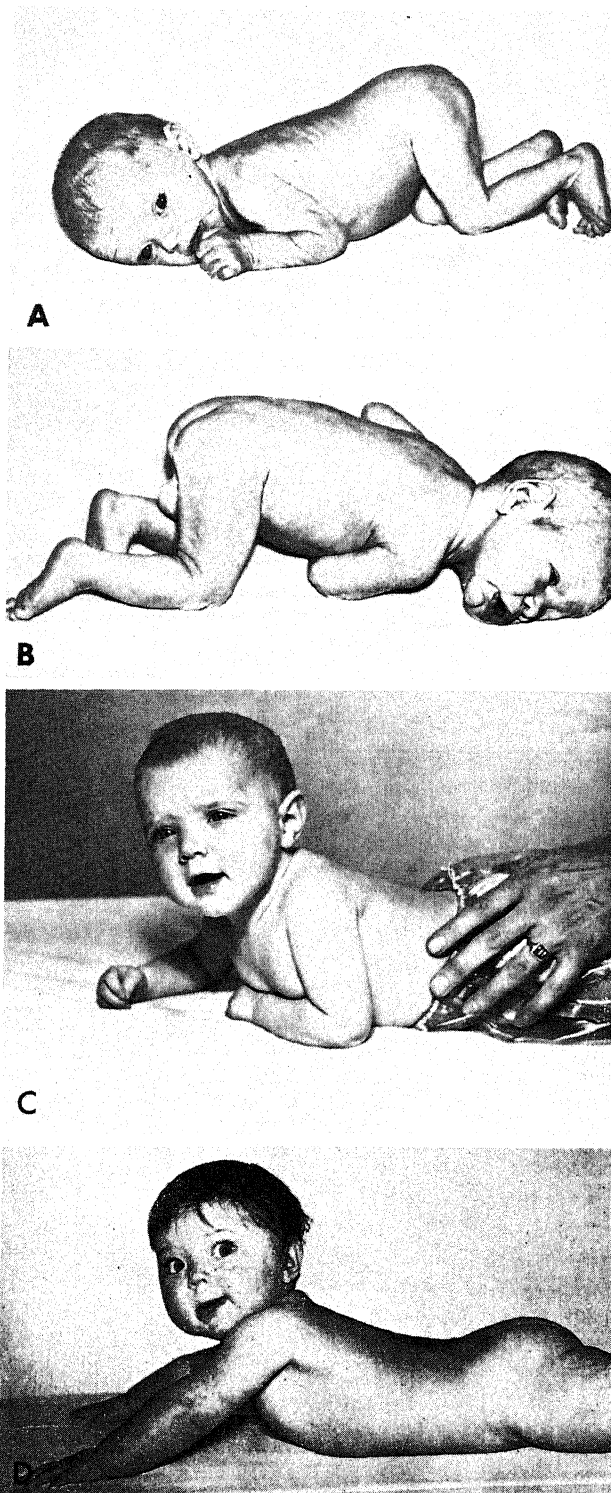



FIGURE 49. *A*, At 3 or 4 weeks, if placed in a prone position, the pelvis is high, knees flexed under the pelvis. *B*, Prone position at 4 to 6 weeks of age. The pelvis is still rather high and there is intermittent extension of the hips. *C*, The prone position at 12 to 14 weeks. The weight is on the forearms. The plane of the face almost reaches an angle of 90° to the couch. *D*, The prone position at 24 weeks. The weight is on the hands, with extended arms. (Taken from Illingworth, R. S.: The Introduction into Developmental Assessment in the First Year. With permission of Messrs. E. and S. Livingstone, Ltd., (1962).

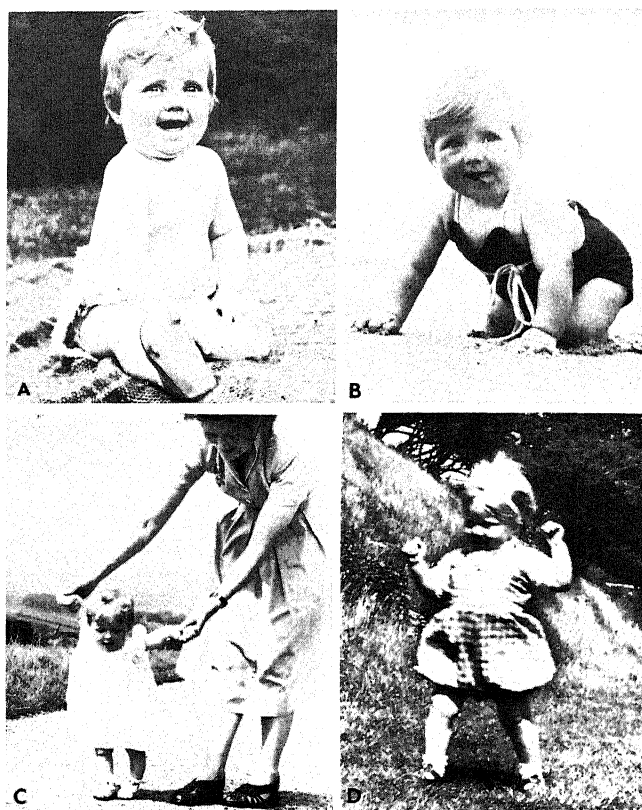



FIGURE 50. *A*, 26 weeks. Sitting with hands forward for support. *B*, 44 weeks. The creep position. *C*, 48 weeks. Walks with two hands held. *D*, 13 months. Walks without any help. (Taken from Illingworth, R. S.: The Introduction into Developmental Assessment in the First Year. With permission of Messrs. E. and S. Livingstone, Ltd., 1962.)

essential exercises for the young infant. Babies can turn from side to back or side to front by 3 or 4 months, can flip completely from back to front or vice versa by 6 or 7 months if free of clothing. Crawling, or hitching along on stomach or back, has usually been discovered as a means of locomotion by 6 to 8 months. Creeping, or moving on all fours (hands and knees, or, occasionally, hands and feet), follows crawling, although some children creep without crawling. Many children of 8 to 10 months cover ground rapidly with a sideways sit-hitch-creep technique, scooting along on one hip with the two hands and opposite foot as propellers.

Pulling up onto the feet by means of a chair or table leg often accompanies this period of creeping, and many children learn to pull up some time before they learn how to let themselves down to a sitting posture again. From this standing up with the help of support, the baby begins gingerly side-stepping back and forth around chair or crib, or whatever object is providing the support. Walking with support follows for the average child around 12 months of age. Mastery of the art of standing, balancing and, hence, walking taxes muscular strength, produces a good many falls, is slow and, therefore, requires a good deal of courage and patience. Most babies walk without

support by 13 to 14 months. Figure 50, *A* to *D*, shows parts of this developmental sequence.

After walking has been fairly well mastered and has produced the genuine satisfaction which will fix it in behavior, presentation of a kiddie car or tricycle will offer a fascinating new means of getting around and will extend the child's range of body skills. Especially helpful to the thrill of adventure and self-confident control of the body are two-wheel scooters given to the child as body balance and running skills develop. Fortunately both for the development of physical skill and psychological adequacy, bicycles are demanded by most children of 5 or 6 to 8 or 9 years of age. Traffic hazards in some communities are great; the parent must, therefore, see that lessons of self-care in traffic have been well learned before bicycle or scooter-skate freedom is permitted. With the help of most public schools and the cooperation of P.T.A.'s and local police departments this is learned, as a rule, by 7. However, the riding should be limited to uncrowded areas until the child has complete mastery of his vehicle.

Independent walking, as does each stage of motor development throughout the growing period, appears at a comparatively wide range of ages, and illustrates nicely arguments against a too rigid adherence to standards of measurement. The average age of independent walking, determined by studies of many children, is somewhere between 13 and 14 months. Some children walk as early as 9 or as late as 18 months; an occasional child walks at 7 to 8 months. Fast growers usually walk early; slower growers later. Yet both are probably developing at a "normal" rate, that is, a rate desirable for that individual child because it is a rate compatible with his total development.

Factors Influencing Age of Walking and Later Motor Skills. Acquisition of walking skill, like the achievement of most motor skills, depends upon a number of factors. Probably first is good physical health and adequate bone and muscle development. Plenty of space for general locomotion activities is important, along with the opportunity to use the space freely without too much interference from adults. Also conducive to rapid learning are clothing which permits freedom of action and shoes which are well-fitting and have firm but flexible soles.

General intellectual development used to be considered one of the factors most closely associated with age of walking. Normal development of the nervous system and normal intellectual alertness are indeed closely correlated with normal age of walking and of all motor development, yet delayed walking or other delayed motor development does not necessarily indicate retarded mentality since there are, as we have seen above, many other reasons why children may prove slow in these developments. Motor skills are learned more rapidly (at any age when understanding is possible) if the individual just understands and applies the mechanical principles involved in the skill to be learned (Mohr and Barrett, 1962).

Emotional factors are important. Severe accidents may produce timidity; illness may rob the child not only of physical strength but also of normally active aggressiveness; too great anxiety on the part of adults that the child may hurt himself may make him overanxious about the dangers of the bumps without which bodily skill can scarcely be achieved. Too great concern lest he prove late in learning to ride a bicycle or do other motor stunts, or too great enthusiasm about first successes will frighten timid or self-conscious children away from further effort. Children, however, need the

enthusiasm and encouragement of adults in all their learnings, the warning here simply meaning that over-enthusiasm may place too great emphasis upon the necessity to succeed and may frighten some children.

A few children, lacking a vigorous interest in learning new things, may prove slow in acquiring motor skills because they have no need to get about, since everything is brought within their reach and they like the coddling better than the adventure involved in finding things for themselves. In learning all motor skills, children need health, vigor, opportunity to experiment, freedom to adventure, and the satisfactions of adult encouragement. The accomplishment of the first independent walking or of learning to ride a bicycle or to drive a car is rightly celebrated in the lives of most children. These accomplishments, whether the parents are consciously aware of the fact or not, represent a sort of "commencement" or "graduation," and are "certificates" of good physical and psychological development if they occur near the normal age.

Progress of General Body Control

From the widespread legs and the wobbly struggle for balance which characterize the first walking of most babies, there gradually develops a smoother gait, followed by ability to run or trot about. *Climbing* up and down stairs depends upon opportunity to practice and, of course, the steepness of the stairs, but most babies can negotiate passage upstairs by a creeping-hitching method at about the time they walk easily. Depending upon the steepness of the stairs and the banister aids, most children acquire the adult method of ascending and descending by alternate feet on successive steps by 3½ or 4 years of age. Climbing on low inclined planks, packing boxes, jungle gyms, fences and the like is usually well established by 3 years of age if children have access to such equipment.

Hopping on one foot, skipping, jumping, and *standing on one leg* all come before school age if normal opportunity and freedom are allowed. Most books on kindergarten and primary practice suggest hopping, skipping, jumping and galloping as appropriate group activities for 5 and 6 year old children, saying that younger children cannot master these accomplishments. This is good advice since many children are not able to do these things before this age.

Five and 6 year olds enjoy the following "stunts": jumping high; turning somersaults; doing cartwheels; riding a bicycle; standing on the head; flying a kite; jumping rope (Fig. 51); swinging (Fig. 52); running fast; sliding under the bed; climbing through a small hole or a large pipe (Fig. 53); or climbing on jungle gyms. Boys enjoy motor stunts as one of their favorite play activities; girls tend to choose activities requiring less strenuous physical activity (Koch, 1960).

In a study of the 30-yard run, standing broad jump, and velocity in throwing a baseball as performed by 125 girls age 6 to 14 years for whom there were performance scores for at least three consecutive years, it was found that correlations of year-to-year scores and of first grade scores with those of grades 3 to 5 show that the girls tended to remain in the same relative position within the group during the elementary school years; this was especially true for the run and jump, but less conclusive for the throw (Glassow and Kruse, 1960).

Children are 6 years old before the majority of them can hop skillfully. The range of ability is wide, since among 6 year olds one may find every level of hopping skill from refusal and inability to excellence.

Galloping is a skill not as a rule seen

FIGURE 51. Many 6 year olds are expert at jumping rope. (Courtesy of H. Armstrong Roberts.)

FIGURE 52. Many 5 year olds are expert with swings. (Courtesy of H. Armstrong Roberts.)

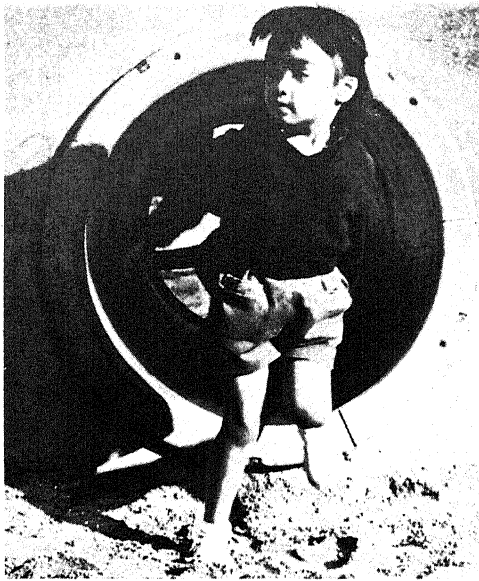



FIGURE 53. This "tunnel" is part of a playground in Paris. (Courtesy Georgia Latwick.)

in 3 year olds; but many 4 year olds practice it and many 5 year olds are able to do it fairly well, although not until 6½ years are most children really skillful. Children appear to have different ways of learning to gallop. Most seem to introduce a galloping step into their running or as an emphasis on the strong beat of music. Only later do they learn the basic movement of throwing the weight on to the forward foot when galloping. When children become skillful in galloping they introduce many variations and are found to be galloping sideways and backwards and to add gestures or vocalizations while in motion.

Skipping enters later than galloping into a child's motor repertory. At 4 years of age only a few children are able to skip; by 5 many children are able to do so, while at 6 years nearly all children have learned this basic step.

Children of 2 become very skillful in the management of kiddie cars or tricycles, steering, backing, turning with speed and accuracy. Three year olds are facile on tricycles and often on two-wheeled scooters. Four year olds push and turn wagons and complicated foot-operated automobiles and airplanes with great skill. Five year olds sometimes roller skate fairly well and, with practice, can perform the complicated footwork involved in some dance steps. Seven and 8 year olds are often graceful, speedy and agile, being able to master quite complicated dance steps.

In the use of appropriately sized slides Gutteridge (1934) found that 54 per cent of her 3 year old children could slide well, the percentage rising to 71 for 4 year olds, and to 96 for 5 year olds. The difference in the height of the slide did not appear to make a marked difference in proficiency except in the early years. From 4 years of age the majority of the children were successful at any usual height of slide. Interest in stunts on apparatus in gymnasium or on the playground increases rapidly from 5 years throughout the elementary school years. Many 5 year olds are experts in the general body coordinations required for swinging, as is seen in Figure 52.

Skills Characteristic of Early Primary School Years. In learning to *throw and catch a ball* we can see a steady pattern of development. Gesell (1940) introduces his discussion of throwing skill by saying:

> Throwing involves visual localization, stance, displacement of bodily mass, reaching, release, and restoration of static equilibrium. Skill in throwing a ball requires a fine sense of static and dynamic balance, accurate timing of delivery and release, good eye-hand coordination, and appropriate functioning of the fingers, as well as the arm, trunk, head, and legs, in controlling the trajectory of the ball.

Gutteridge's work (1939) still stands as a classic study of ball-playing skills

in younger children. She reported that, although children of 2 and 3 years were often found practicing the throwing of a ball, no 2 or 3 year olds were rated as throwing a ball well, and only 20 per cent of the 4 year olds were so rated. From 5 years to 5 years 6 months, however, 74 per cent could throw well and at the latter part of the same year 85 per cent were proficient. The range of ratings in throwing is wide at all ages, for even at 6 years of age it covered the scale from awkwardness to excellence in ball throwing. She reports that children of 4 years were rated as awkward in attempting to bounce a ball. It was only at 5 years that 45 per cent were proficient, while at 6 years 6 months 61 per cent were able to bounce a ball well. The range of achievement in bouncing was also wide. It covered virtually the whole scale of achievement at every age level. In ball catching only 29 per cent were proficient at 4 years, while at 5 years 56 per cent were able to catch a ball and at 6 years the percentage was 63.

Ball playing is so universal in the United States that skill in handling balls of all kinds is almost a *sine qua non* for good peer group contacts in the elementary school years. Simple ball playing which requires little in the way of complex teamwork is somewhat popular even in the primary school years, although chase and run games occupy more of the time of children of this age because they are more skillful in running than in throwing and catching. Team ball games are popular with upper elementary school boys who, at that age, not only possess good throwing and catching skills, but also are attracted to complex team play (Chap. 12). Touch football is popular even with girls in the upper elementary and secondary school years. Soccer is especially popular with high school and college girls. Basketball, volley ball, tennis, Ping-pong, and other ball games which require accuracy of timing hold the interest and develop the skills of children throughout preadolescence and adolescence.

Strang (1959) gives an excellent summary of general bodily skills characteristic of children at entrance to school (5 and 6 years of age). Running, dancing and climbing are given as activities which afford much pleasure and profit to primary children. Children begin jumping rope between 5 and 6 years, can walk a chalk line or the top of a fence and can balance on roller skates, but have trouble with single blade ice skates. Most 6 and 7 year olds, however, can manage ice skates. If previous lessons of balance have been learned on two-wheel scooters, some children can ride small bicycles at 5 or 6, and scooter-skates at 5.

Most children of 6 or 7 can roller skate gracefully, ride bicycles skillfully, and do stunts on the scooter-skate. In these skills, as in climbing, we see evidence of an early stage of learning in which the motor habits have not quite smoothed out, viz., the stage of tumbles, tense muscles and awkwardness. Later, with practice, comes a stage of rhythm in all motor learnings. The clumsiness of the 18 month old child in walking passes into the awkward, flat-footed run of the 2 year old; and this passes into the increasing skill and balance of the 3 and 4 year old; but one seldom sees the flow and ease of movement which are referred to as grace in walking or running until the child is 5. So it is in roller skating or bicycle riding. P[illegible] meal, step-by-step movements w[illegible] are characteristic of the first stag[illegible] learning flow with time into the assured, relaxed rhythm of mov[illegible] which we call grace. Once a [illegible] acquired up to the level nee[illegible] proficient performance, [illegible] practice will make it ope[illegible] smoothly as an integrated [illegible]

cessory or waste movements are eliminated, fatigue reduced, speed and accuracy increased, with a consequent increase in emotional satisfaction.

Many children never go on past the stage of awkwardness in their motor learnings, partly because they do not practice enough but, partly too, because self-consciousness and negative attitudes grow up which keep the child from freeing himself as he moves. It is important in all dealings with children to see that no adult approach occurs which would cause feelings of inferiority or self-consciousness to "tie up" motor skills. Ridicule, sarcasm, scolding or laughing at children's clumsiness in the early learning stages, or at the inevitable slips which cause dropping of objects, stumbling or falling, may cause an emotional blocking that may result in tense movement and awkwardness throughout the child's life. Instruction in motor skills can, through pointing out more efficient procedures, cut down waste movements and keep poor habits and false accessory movements at a minimum. Children must practice any new skill with satisfaction if learning is to proceed rapidly. The teacher can do much to keep motivation at a high level and to help the child to retain self-confidence in his ability. Unless there is a defect of muscles, nerves or bone structure, grace and free-flowing, rhythmic bodily movement may become the possession of every child. No child should be robbed of the joy which can be found in skillful bodily movement, of the social contacts it can provide during the preadolescent and adolescent periods, or of the contribution which adequate exercise and bodily expression can make to general mental as well as physical health and vigor throughout life. Many children, however, do lack such opportunity. Motor release is an important and sound device of the growing child for expressing himself, for obtaining balance psychologically, and for a safety valve against anxiety (Lee and Lee, 1958).

FIGURE 54. The urban slum child's only playground—an empty building. (Courtesy Georgia Latwick.)

The Elementary School Years. Joy in the use of the body is normal for children throughout the elementary school period. Extremely popular are running, chasing, jumping rope, hopscotch, hikes in the woods, roller-skating, bicycle riding, swimming and all other forms of physical activity which are outlets for energy. Most children from 6 to 12 are problems to the adults who are responsible for them because of the insistent vigor of their movements, their inability to remain quiet in body or voice, their concentration on physical play and roughhousing. The school-age child's new physical power and his concentration on "roughhouse" activity may intensify conflict between adults and children at this age if parents and teachers do not make provision for them and do not allow the freedom needed. Wang (1958) found that from the fourth through the sixth grade the brighter children showed a steady increase in active play, whereas duller

children tended to cling to more immature forms of recreation.

In motor skills, as in intellectual skills (see Chapter 11), the elementary school years prove to be a period of practice in the perfection of lessons already learned and in the extension of new skills. Interest in the use of their own bodies is so dominant in this period that children, as a rule, devote much more time to this than to the use and manipulation of tools or toys like blocks or dolls, popular as these toys are. Strang (1959) aptly summarizes the situation by saying, "An eight-year-old will probably prefer tag to toys."

Children of this age have the need to push themselves into the type of new learnings which require courage. They are constantly "daring" each other and taking "dares." Stunts like walking high and narrow fences, performing on a high bar or trapeze and games like "follow the leader" are so characteristic that most writers fail to attribute such behavior to any other age (Fig. 55). At very early levels, however, children tend to "stunt" in any field of motor activity as soon as they master a skill. Two and 3 year olds use slides "belly-buster" or backwards, as soon as they have conquered the usual "slide-on-the-seat" method. Common observation of any group of preschool children or even of 1 year old children will reveal that children scarcely learn to walk with reasonable balance before they begin such "stunts" as running on tip-toe, running with arms held high above the head and, later, whirling to make them-

FIGURE 55. Eight year olds play "follow the leader." (Courtesy of H. Armstrong Roberts

selves dizzy. In all types of motor skills we can expect from an early age variations in such directions as speeding and the addition of difficulties of balance or coordination not inherent in the original nature of the skill itself.

This seems to be a general principle in motor learning. As children grow past the preschool years into the elementary school age, they develop not only more expertness and versatility, but also more speed of movement and greater strength. There is a steady increase in motor reaction time from 3½ years of age (Goodenough and Tyler, 1959).

Once the basic mastery of any skill has been achieved, concentration upon the mastering of the skill lessens and the skill tends to be used in more imaginative play or for work or other use. One can see a 6 to 8 year old child concentrating on riding a bicycle, learning to get on, start, stop, balance. Once learned, however, the skill is utilized to run races, to speed up the journey to school or for some other purpose. At first the joy lies in mastering the learning, then in using the skill to some end. Only occasionally will renewed concentraction on learning itself occur, and this will be when some new stunt is being learned: backing the tricycle, turning sharp corners with the bicycle, throwing a new curve on the ball (Fig. 56), making one-handed catches or scooping up

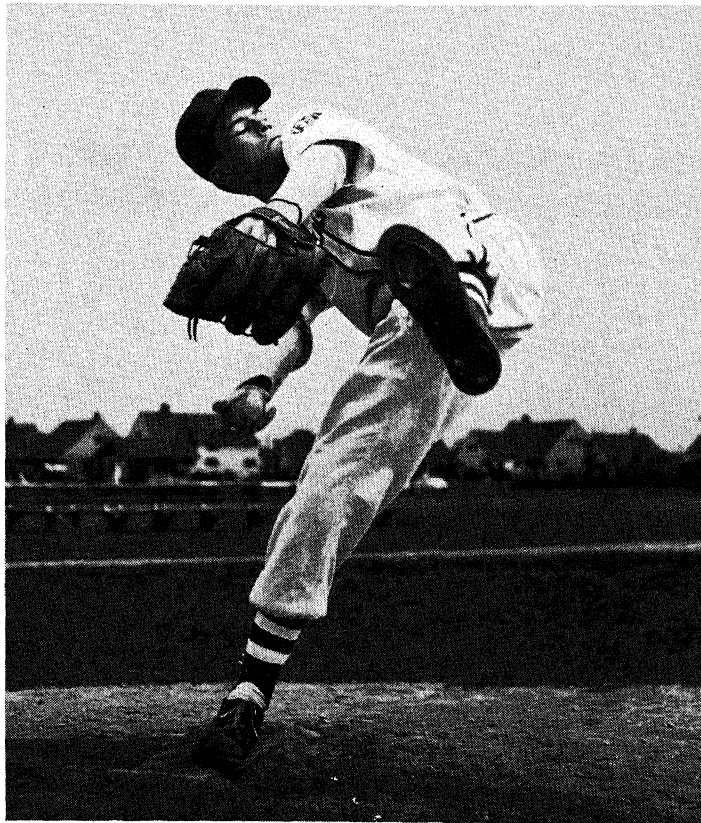



FIGURE 56. Twelve throws a new curve. (Courtesy of H. Armstrong Roberts.)

grounders. If we are to make physical education programs useful as well as interesting to children, we must help them to enlarge their variety of skills as well as to amuse themselves by using skills already mastered.

Accident Proneness. Much has been written lately on accident proneness in children and in adults. One of the explanations of accident proneness is that accident behavior is "unconscious suicide," or hostility turned inward, and in children is generated by revolt against inhibiting authoritative or punitive parents (Rado, 1956).

Another theory is that the accident-prone child is acting out self-destructive fantasies on the part of a parent. Still another is that accident proneness is linked to identification with accident-prone parents.

All of these theories have recently been questioned by the results of a careful interdisciplinary study of accident-prone children ages 6 to 10 years, which is the age range of the highest accident rate in childhood (Marcus, 1960). This study corroborates the findings of several previous studies, viz., that while medical examinations reveal no physical differences between accident-prone and accident-free children, the accident-prone group appear to function differently; they are more active before and after birth, show earlier motor development and have good coordination. The accident-prone groups give evidence of somewhat more emotional problems, and they tend to use the motor system as the primary channel for expression of anxiety. In other words, these children tend to react to tension with an increase in physical activity.

Studies of older children show that accident proneness in these, as in younger children, is associated with a tendency to express unmet emotional needs in direct physical activity (Stiles, 1957). The implication here is that since such physical expression of unmet emotional needs is evidence of immaturity in emotional development, the accident-prone child is less mature in emotional expression than is the accident-free child.

However, Marcus et al. (1960) are emphatic in stating that accident proneness is not a fixed personality trait, but that a variety of individuals may at various times in their lives fall into an action pattern which may lead to an accident, and that any person under emotional stress is likely to have more accidents than is normal for that person when free of stress.

The goal with accident-prone children, then, is not to try to change their outgoing action patterns but rather to help them to increase their capacity to tolerate stress.

Adolescence. *Motor coordination* continues to increase during adolescence, with a deceleration in rate of increase during a period in pubescence, and a definite sex difference appearing around 13 years, after which little change in scores occurs for girls but a marked increase in the scores of most items for boys. Dimock (1935), classifying boys according to pubic hair development, found a decrease in rate in the period when boys passed from prepubescence to pubescence, which preceded the period of most rapid growth in size. In terms of chronological age the lowest increment came between 13½ and 14½ years. Jones (1944) reported a lag in motor ability around a skeletal age of 14. In boys the increase appears to be associated in timing with the increase in strength described in Chapter 7 (Willgoose, 1950). The deceleration in rate of growth of motor coordination, particularly in balance, has been attributed to readjustments thought to be necessary because of the growth of body size and change of proportion (Espenschade, 1953). Thus, the concept of

the adolescent going through an "overgrown, clumsy" stage has been prevalent. Tanner (1962) states that present data do not support this concept and offers as an explanation that motor skills, in general, increase in step with motor strength, with some elements such as balance showing a continual increase with age, with little if any adolescent spurt. Watching the same child through his growing years seems to indicate that a clumsy adolescent is likely to have been a clumsy child earlier and is liable to be a clumsy man later. Some of the awkwardness of adolescents can, at least in part, be attributed to self-consciousness and ineptness in social situations. Some adolescents are graceful when in motion but awkward in repose.

Motor performance, such as running, jumping, weight throwing, obviously improves with age. Studies of a 600-yard run as a measure of endurance and a 100-yard run as a measure of skill demonstrated steady improvement in boys and girls from 6 years until about 11 years (Glassow, 1960). After 11 boys continued to improve, although in the 100-yard run their improvement was slower for the period between 11 and 14 years. Girls, on the other hand, after 11 years of age ceased to show any improvement in the 100-yard run and actually regressed in their performance of the 600-yard run so that by the age of 17 to 20 years of age they were no better in performance than the 6 to 8 year olds. Kane and Meredith (1952), measuring standing jump distances of children aged 7, 9 and 11 years, found a sex difference appearing at 9 and well established at 11. At all ages boys are faster than girls in movement time (Henry, 1961).

In general, the rate of learning in large muscle skills is independent of age and sex over the range of 6 to 26 years. Performance level (or skill) varies considerably with age and is relatively poor in postadolescent females (Bachman, 1961).

DEVELOPMENT OF FINER MOTOR SKILLS

Like the development of larger muscles and of gross body control, the development of the smaller muscles and of fine motor skills proceeds in an orderly pattern. Control of eye muscles and of hands and fingers progresses from the random uncontrolled movements of the tiny infant to the finely controlled skills which make reading, writing, drawing and fine mechanical work possible.

Control of Eyes. Although the newborn infant can respond to strong light and to objects before his face, he cannot focus on an object because the eye muscles controlling the movement of the eyes and those controlling the adjustment of the lens for accurate vision are poorly coordinated.

The fact important for a teacher or parent to know in this connection is that most children do not perfect the art of turning both eyes together upon an object until several months of age, and some children still have difficulty as late as 3 or 4 years, looking straight-eyed one moment, and cross-eyed or wall-eyed the next. Some children suffer from strabismus as late as 6 or 8 years. Defects of eye control which occur as late as this, however, should have the attention of an eye specialist, as should even 18 month old children whose eyes have become fixed at the wrong angle.

The finer control of tiny muscles which govern the lens in the focusing of light is pretty well mastered by 5 or 6 months of age. At least, the normal baby gives evidence of being able to see an inch cube at 4 months and specks of dust or hairs on a rug at 6 months. One year old children delight in picture books which have one

or two simple animals or figures on a page. By 2½ years of age children enjoy looking at picture books and listening to simple nursery rhymes. They cannot concentrate on one page more than a brief moment, however, but will want to move from page to page rapidly.

The art of focusing the light on the retina and at the same time carrying the eyeballs horizontally across the page is still so difficult for many 6 year old children that they can read simple primers only by tracing the lines of the text with their fingers as an aid to the eye in keeping the place. Eye control proceeds rapidly from 6 years on, however, and increases in the eye controls as well as in span of perception which permit increase in speed of reading are possible well into adulthood for people of normal vision or who are properly fitted with glasses.

Control of Hands. At birth one of the most characteristic of the random movements is a constant fanning of the hands, the fingers and thumb spreading and closing alternately. From this, apparently, develops not only strength of the individual muscles but also a gradually increasing voluntary control over them.

Even at 3 or 4 months most infants have not yet learned that what they do with their fingers has anything to do with the retention of a rattle. They grasp by chance and let go by chance. However, they are beginning to make some important connections between what they see within reach and the fact that contraction and extension of certain arm and finger muscles brings the seen object into possession. At 3 months a proffered toy will usually throw the baby into excited movement of arms, legs, and head, but there is as yet no selection from these random movements. Close observation, however, will reveal that once this learning is initiated, even a few trials lead to a start at selecting right from wrong movements, and in a few days arms begin to do more of the reaching while head and legs do less. Gradually eye-hand coordination becomes more effective and by 4 to 5 months most babies will reach directly with hands, closing in upon the coveted objects with a fair degree of accuracy. At 6 to 7 months many babies reach and grasp effectively with one hand in the lead. Nearly all babies have achieved this by 9 months of age.

Illingworth (1962) outlines this development in use of the hand for grasping as follows:

4 weeks: Hands predominantly closed. Grasp reflex present.

8 weeks: Hands often open. Grasp reflex largely lost.

12 weeks: No grasp reflex. Holds on to rattle placed in hands. Pulls at dress. Hands mostly open.

16 weeks: Hands comes together in play. Pulls dress over face. Tries to grasp object. Plays for long time with rattle placed in hand.

24 weeks: Holds bottle. Palmar grasp of cube (Fig. 57, *A*). Drops cube when given another.

28 weeks: Transfers object from hand to hand. Unidextrous. Feeds self with biscuit. Bangs blocks on table. Holds one cube when given another.

40 weeks: Finger–thumb apposition. Can pick up pellet between finger and thumb. Offers block to mother, but won't let it go. Index finger approach to an object (Fig. 57, *C*).

44 weeks: Places one block after another into a box.

48 weeks: Gives block to mother.

52 weeks: Mouthing nearly stopped. Beginning to throw objects on floor.

1 year: Mature grasp of cube (Fig. 57, *B*).

One of the interesting things to note about the hand action of the newborn

baby is the complete uselessness of the thumb. Characteristically, the thumb lies flaccid in the palm of the hand, being fanned out as the fingers spread, but seeming to have no "character" of its own. The Darwinian grasp, characteristic of the hand action of newborn babies, is a "monkey" grasp, using the four fingers, but not opposing the thumb (See Fig. 57, *A*).

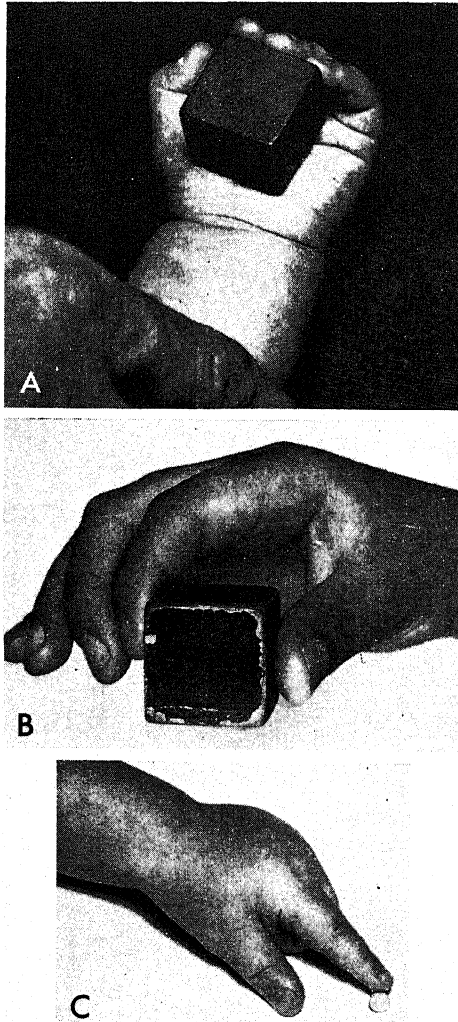



FIGURE 57. *A, B, C,* Manipulation. (Taken from Illingworth, R. S.: The Introduction into Developmental Assessment in the First Year. With permission of Messrs. E. and S. Livingstone, Ltd., 1962.)

Effective use of the hand depends not only upon eye-hand coordination and proper extension and flexion of arm and finger muscles but also upon the development of the "pincer" technique which uses the thumb in opposition to the fingers in grasping. (See Figure 57,*B*.) Early reaching and grasping under voluntary control at 3 to 4 months takes the form of a "palmar scoop," in which the thumb is still ineffective and objects are scooped up by the four fingers and side of the palm. The thumb "takes on character" and becomes effective in the "pincer" technique progressively from 6 to 12 months, at which time babies can pick up objects with a dainty finger and thumb grasp, and the index finger now points (Fig.57,*C*).

By 18 months accurate reaching for near objects has become automatic. By 2 years one block can be put on top of another, but the third is a challenge, as we see in Figure 58. In reaching for objects beyond arm's length, however, much body balance is required. Even 4 year old children tend to push one set of muscles in improper balance to others, hence are awkward and immature in reaching. Not until 6 years for most children is the art of body balance so well in hand that the child can reach for objects beyond arm's length with ease and assurance.

Behavior Problems Associated with Learning to Use Hands. At around 6 months of age, when prehension has become effective for picking up tiny objects and when the eyes have mastered focus upon tiny near objects, the eyes and hands have learned to work together. The happening together of these growth accomplishments produces a characteristic behavior problem. Parents of babies of this age are often troubled by the "baby's dirty and dangerous habit of putting pins, specks of dust, and hairs into his mouth." Occasionally, this "behavior problem" has been cited as evidence of the

FIGURE 58. The third block is a challenge for two year olds. (Courtesy of The Merrill-Palmer Institute.)

baby's "natural inclination" to eat dirt. Understanding of growth patterns, however, makes it possible to explain this as a by-product of a focusing of several patterns of learning and a natural practicing of new learnings which in themselves are thoroughly desirable. If one looks upon such behavior as a troublesome problem which indicates perverse instincts, "treatment" is likely to be instituted, and tension on the part of the parent is almost inevitable. If it is regarded as the exercise of naturally desirable learnings, the answer is simply to see that the baby has a clean place to play and plenty of desirable and safe objects to manipulate and to put into his mouth.

A second "problem" is characteristic of the period when skill in the use of the hands is proceeding at a rapid rate and when exploration of the body is characteristic. As the body becomes familiar to him the child tugs his ears, grabs his toes, rubs his stomach and explores his genitals. Masturbation sometimes accompanies irritation of the genitals, but it is more often an outcome of the baby's growing awareness of his own body. Most children in the third and fourth years, and sometimes as early as the first or second years, give evidence of an awareness of pleasurable sensations from the genitals. Kinsey (1948, 1953) reported that virtually all children at some time engage in masturbation.

Most psychologists, psychiatrists and medical personnel agree that the act of masturbation as such is not harmful to the body or to adjustment, that it does not cause disease or insanity, and that it should be regarded as of emotional significance only when engaged in to excess and as a substitute for more rewarding outgoing activities. As in thumbsucking among school-age children, it often indicates too little interest in a more construc-

tive use of the hands, or such unfortunate treatment of the habit in babyhood that it has persisted. In this case there would be implied the need to wean the child away from such concentration on himself and his own body and into an increasing satisfaction and pride in using his hands and his mind for other things. Occasionally, the habit results from a deep need for affection or for status with one's family. In any case, a teacher can provide a program challenging enough to encourage constructive use of the hands and creative outlet for the child's feelings.

A third problem, again associated with the period of rapid increase in use of hands, is that of thumbsucking, a habit which is found frequently among American children and children of Northern Europe (Engel, 1962). Children who are finding reasonable satisfaction in the use of their hands, whose affectional security is sufficient, and who are not clinging to babyhood for some reason or other do not suck their thumbs past 4 years of age. If a child is still sucking his thumb when he enters school the teacher should make every effort to interest him in the use of his hands for more constructive purposes. She should also do everything possible to make the child feel emotionally secure in his new environment and should quietly expect that the habit will stop as time goes on, namely, as the child learns more satisfactory "grown-up" ways to find his security and his place in the world. In this, as in any case which requires special understanding of the child, contact with his parents may prove helpful

Thumbsucking is considered to be one of the causes of protrusion of the front teeth (Sillman, 1951). Not all thumbsuckers develop malocclusion (Traisman and Traisman, 1958). Spontaneous correction of malocclusion tends to occur when the thumbsucking is stopped, even after the preschool years. Children tend to rub sore gums when teeth are nearing eruption. Parental interference with this may call too much attention to it, which may increase both the length of time it continues and the intensity of the force of the sucking, both of which increase the effect on the dental structure.

After age 2, girls were found by Honzck (1962) to show greater persistence and greater incidence in thumbsucking.

Preference in Use of Hands. A question which arises frequently in education is whether to compel the use of the right hand. Some educators feel that this is a right-handed world; therefore, all children should be trained to use the right hand. Others feel that children should be allowed to use the preferred hand.

There is still a definite difference of opinion as to the bases for handedness. One group of writers feel that the basis is a neurological one, that one hemisphere of the brain is the seat of motor control for the opposite hand (or foot), and that interference with a child's "dominant" handedness often results in interference with motor speech or other fine motor controls (Glasner, 1953). Other writers stress the fact that exact conclusions about the bases of handedness are hard to establish, since social and cultural factors enter the life of the child so early that they may be the reasons for the high percentage of right-handedness. Hildreth (1950) points out, for example, that there is considerably more ambidextrality (use of either hand) and left-handedness among boys than among girls. Since girls are more tractable and less resistant to adult and other cultural pressures, she reasons, the social pressure to eat and write with the right hand influences girls more; hence for this and other reasons, handedness may be due primarily to social or cultural

factors. Still another theory is that the side to which the infant faces as he assumes the neck tonic reflex position may be the side for which handedness will develop (Sitt, 1960).

Where handedness is a result of genetic neurological factors or of social and cultural pressures, it is clear that the vast majority of the population learns in fairly early childhood to use the right hand. Percentages of left-handed people in the population have been found by various studies to be from 4 to 5 per cent (Hildreth, 1950) to 50 per cent (Birch and Lefford, 1963). Distinct hand dominance is present as early as nursery school age (Brown, 1962). Left-handed children write as well as right-handed children if they have consistently used the left hand and have had help in doing so correctly (Trankell, 1956).

There is some additional confusion in the issue of handedness because it is clearly evident that nearly all babies use either hand with almost equal skill (or lack of skill) in the earliest months of life and do not consistently prefer one hand over the other until around 12 to 18 months. Increasing preference and use of one hand proceeds as the child becomes more practiced in manual skills. Clear right-left discriminations of own body parts, according to Belmont and Birch (1963), does not stabilize until about age 7, which is 2 years prior to the establishment of consistent handedness, and 3 years prior to stabilization of eyedness and eye-hand preferences.

Whatever the genesis of handedness, one fact becomes clear and is agreed upon by the vast majority of writers, namely, that right-handedness should be encouraged but never forced. Thompson (1952) says, "A decision to change a left-handed child to right-handedness should be considered a major readjustment for the child, and a program not to be instituted without serious caution and psychological planning." Whatever difficulties the left-handed may suffer in a right-handed world, they are minor compared with those of the child who has a strong natural bent toward left-handedness, and is compelled to shift to the right hand. The interference and thwarting which such a shift involves may have many unfavorable aftereffects (Jersild, 1960).

Teachers should remember one additional factor in dealing with left-handed children who are beginning to learn to read and write. Since left-handed children tend to confuse direction in both reading and writing, every effort should be made to teach these children to establish a proper direction.

Further Growth in Fine Motor Skills. Babies begin to learn to feed themselves by reaching for the spoon and helping to hold the cup, many of them before 1 year of age. Most children of 3, if chair, table, food, spoon or fork, and plate are right, can feed themselves without many spills on chin or tablecloth.

Little children cannot be expected to chew hard things with the mouth entirely closed or to observe perfect table manners. However, gobbling and gulping, smacking and smearing are unnecessary even for 2 year olds after the first preliminary stages of motor awkwardness are over. The baby "fist grip" on spoon or fork can be left behind by 3 year olds. Use of the knife for cutting and spreading is usually not possible before 5 years. Many children cannot cut any but the tenderest meat until they are 6 or 7 years old.

If clothing is unfastened easily enough and if either a small toilet or steady step with which to reach the adult toilet is provided, children of 3 can usually take care of themselves for urination. This does not mean that all children are free of bed-wetting or even entirely free of accidental daytime wetting of clothes at this time.

Children differ in maturational readiness for learning anal and urethral sphincter control. However, indication from a number of different studies is that most children at about 18 months are ready to begin this learning. This is a time when the child walks easily, is aware of and interested in eliminative functions, responds to language and is interested in imitating adults. Control of the anal sphincter usually precedes control of the urethral sphincter. Girls achieve urethral control before boys do, as a rule, but boys achieve anal control earlier (Hallgren, 1957). Relapses are not uncommon until control is perfected. Even after some months relapses may occur under conditions of illness, overfatigue or situational stress.

ENURESIS. Persistent incontinence in normally intelligent children indicates that something is wrong. Enuresis is defined as "repeated involuntary micturition after the fourth year of life when not attributed to any gross organic lesion." In one study in Holland it was found to occur in 13 per cent of boys and 9 per cent of girls. Ninety-one per cent of it was nocturnal. There appears to be a "nuclear" group of children in which it is primarily genetically determined, although modified by environmental factors. It is important in all cases to check physical causes for the difficulty (Hallgren, 1957).

A study of 830 third graders showed 10 per cent to be currently wetting the bed at least once a month (Tapia et al., 1960). It has been suggested by another study that an individual episode of enuresis may be a dream substitute or its equivalent, and, as such, it is a discharge phenomenon with no psychological concomitant (Pierce et al., 1961).

One study of the psychological concomitants found enuretic children to be inhibited, blocked and immature, and lacking in self-confidence (Malmivarra and Kolho, 1962). Unhappy children have a higher incidence of enuresis than do happy children; so do children going away from home, as contrasted to children at home for schooling (Carvalho, 1961). "The child who does not take readily to toilet training may suffer frustrations in his relationship with his mother. He may display hostility by expulsion at the wrong time or by refusing to defecate when he is supposed to do so" (Crow and Crow, 1962).

All children must have acquired efficiency in self-care at the toilet before entering school, and should be taught to report to the mother if daily bowel elimination fails to occur. In training children for cleanliness great care should be taken to see that the training is not begun too young and that use of coercion and of shame or other forms of punishment is avoided. The psychological repercussions of such methods are serious.

Many mothers, busy with the care of younger babies, turn the chore of toilet procedure over to school-age children without adequate check, only to find illness following in the wake of constipation because the child has failed to report bowel irregularity. Mothers sometimes find underwear soiled with feces and discipline the child for carelessness when the real difficulty is that the child has never been taught to wipe himself properly. Here, as so often happens, is a "behavior problem" which is so regarded because some learning is taken for granted when the child has actually had no opportunity to acquire that knowledge.

As in self-care at the toilet, self-help in dressing and undressing depends upon the type of clothing. Tiny buttons and hidden fastenings are impossible for the young child to handle. Complicated belts and back buttons are too much for even school-age children. Simple yet warm clothing both for indoor and for outdoor wear is now

available in many attractive designs for both boys and girls. If clothing is simple enough, 4 to 5 year olds can manage the whole task of dressing except tying the bowknot on their shoes. The bowknot is a complicated learning achieved by most children only at 6 or 7 years of age. Simple, zippered, one-piece, out-of-door play suits can be managed by 4 year olds, but galoshes, even when comfortably large, challenge 5 year olds. Most 5 year old children can take a bath with help on neck, ears, genitals and back, and help with drying. Such help with the bath or inspection of ears and neck is necessary well into preadolescent years.

Hand Skills Preliminary to Schoolwork. Skills in manipulating pencils, scissors (Fig. 59) and other materials preparatory to schoolwork are accomplished by many children today before entering kindergarten since parents or nursery schools are providing opportunity to practice these learnings. Most children do little creative work with clay, paints and the like before 3, if by creative work we mean taking an initiative in design. Scribbling with pencil, crayons or paints, or smacking and rolling bits of clay or dough are usual activities of 2 year olds. Covering a page with color delights 3 and 4 year olds, who occasionally produce some quite telling effects. Consciously formed designs do not, as a rule, come before the late 4 or early 5 year period. Some 4 year olds who have older brothers or sisters in first or second grade will attempt to copy the drawings of man or house or the formal pattern designs which they see done by the older children. If given ample materials and opportunity, however, the 4 to 5 year period is one in which scribbling and painting or cutting begin to take on constructive form. Lacking this opportunity, children who enter kindergarten at 5 usually have to do the preliminary scribbling and messing by way of first steps before constructive form develops.

FIGURE 59. Late 4 year olds use scissors in a nursery school. (Courtesy of The Merrill-Palmer Institute.)

Before a teacher can be intelligent in guiding children through such learnings she must understand the steps by which such development takes place. A baby of a year will cling to a pencil with his fist and scribble imitatively. Eighteen months of age finds most children able to make vertical strokes with a pencil. At 2 they begin to imitate horizontal strokes. By 3 years the child's strokes are better defined, more specific and less repetitive. At 4 he can give concentrated attention to the drawing of an isolated detail. He copies a circle and a square now, and can combine a horizontal and vertical stroke into a cross. At 5 he wields crayons with considerable assurance and can draw a fairly recognizable man. He is sure of vertical and horizontal strokes, especially downward ones, but is still uncertain in oblique strokes, especially upward ones. He can copy a square and a triangle, but not yet a diamond, which he masters only at 6 or 7 years of age. (See relevance of form discrimination to this in Chapter 9.)

Hand Skills at School Age. From 6 to 12 years of age control of arm, shoulder and wrist muscles improves rapidly, reaching almost the adult level of perfection at 12. Control of fingers progresses more slowly, however, and the fine control necessary for speedy writing or for delicate and rapid finger manipulation of musical instruments is not accomplished by most children before 12 years of age or later. Motor control continues to develop well into adolescence both in total bodily skills, as we have seen, and in finer coordinations.

The fundamental to accessory theory, taught for years in education and educational psychology courses, is on the whole substantiated by research in the child development field. The larger muscles reach skillful control before the smaller muscles do. Fine sewing, detailed drawing, reading of small print, should be delayed until the child is 8 to 10 years old. We must not forget in our planning for young children, however, that even the finer controls, like eye movements and prehension, achieve a substantial amount of their development in the first 5 years of life. Opportunities to scribble and "paint," to cut, and to mold clay, as well as opportunities to button one's own buttons, wash one's own hands and to help with simple household chores should be provided in the preschool years.

From this it can be seen that children are not, upon entrance to school, prepared to write with anything but large movements or to draw detailed objects on small pieces of paper. Smooth, legible, rapid *handwriting* is one of the most important tools for other learning and for the expression of learning which the school teaches. Most schools begin this teaching in the first grade. The first problem becomes one of getting the child's writing to be legible regardless of its size. There is some argument as to the form of beginning writing, some teachers claiming that manuscript (printed) writing reduces the child's confusion because he is learning to recognize letters in printed form in his reading. Other teachers claim that the child who learns manuscript writing only has needless difficulty in learning both to read and to write the cursive style which is usual in handwriting. Speed in writing should be reserved for the time when the child has conquered the muscular coordinations necessary to legibility, order on the page, and reduced size of letters. This is not included as a goal in most school curricula until grades 4 to 6. O'Brien (1958), in reporting studies on handwriting, says that junior high school students are generally equipped to write legibly, but not too many are equipped to combine legibility, speed and ease of performance. He adds that

there are indications that high school students show some deterioration in the formation of letters, while in college legibility diminishes. There are, however, many standards for judging what children have been found capable of doing in the various grades.

It is a matter of common observation that, although there is a close relationship between intelligence and complexity of motor skills which the individual can achieve, many high grade feeble-minded children become superior in handwriting. One explanation of this probably lies in the interest factor. Feeble-minded children cannot master arithmetic or the other school subjects which require a high type of perception. Many of them, however, can achieve the motor skill necessary to copy material in handwriting. Since they can find some success in this area, they find satisfaction in the task and tend to practice much more than do children whose time and attention are absorbed by the subjects which challenge higher levels of perception.

The background of development in *drawing* has been portrayed as a consistent pattern by studies which have been made of young children's drawings (Biber, 1952). At first, children explore whatever medium they are using, experimenting with ways of handling paint or crayon. This is partly learning how to keep the paint from running up their arms as they stand at the easel, partly finding how hard a stroke is necessary on the brush or crayon, partly a sheer acquisition of finger and hand control. Most children will remain happy for some time with experimentations in how one color looks against another, will produce simple masses of color or scribble, often filling a whole page, or declaring themselves "done" with only part of the page filled (Breckenridge and Murphy, 1963).

Some effort to produce designs of line or color or both occur for children who have freedom to experiment at about 3 or 3½ years of age. Once finished, children will often name what they have done. Only at 4, however, will most children attempt to draw or paint an object from a conscious idea, "Now I'm going to draw a rain cloud," or "I'll make a pig." A fatal mistake, which kills most children's interest in drawing or painting, is to make primary school children "copy a vase" or "draw this bunch of carrots." Drawing from imagination, like "painting the story we have just heard" or "drawing a picture of the trip we have just taken" is quite different. Here, the children are free to use whatever art technique they possess in the free portrayal of objects or situations as imagined. Emphasis on art in the primary grades, says Strang (1959), should be on gradually increasing technical control both of art media and of the child's muscles, upon improved accuracy of perception of form and color, and upon the development of creative imagination.

Block building also follows fairly definite patterns of development. First, children simply carry blocks and manipulate them in irregular masses. By 2 or 3 years they place the blocks in regular rows or piles, building very simple structures like enclosures. Following this, structures become more complex, and by 4 or 5 years children use blocks as part of dramatic play. Only at 5 or 6 years do children try to duplicate actual structures they see around them. As in many learning skills, children deprived of opportunity to play with blocks until 5 or 6 years, at that time go through the stages characteristic of younger children though, of course, more quickly.

Construction work with wood, too, follows a pattern for most children. First they must learn to use the tools. A 2 or 3 year old child will spend considerable stretches of time simply

pounding nails into a mat or soft block. Older children, first exposed to a work bench, will enjoy pounding nails, holding a board to saw along a line, and in other ways learning to manipulate the tools. Only when children can handle the equipment fairly adequately do they enjoy "making" things. At 4 years, for example, they like to pound three or four pieces of wood together for a wagon or chair or airplane. At 5 or 6 they produce a more acceptable piece of work and there will be in the product some vague similarity to the boat or table the child set out to make. If compelled to "make" objects, or to shape materials to too fine a pattern, before the basic skills of hammering, sawing and the like are fairly well mastered, the child is likely to become too discouraged and give up shopwork in disgust. Building of doll and birdhouses, book ends, and fairly recognizable model airplanes follows for most children at 6 to 9 years of age. Most first graders can participate in the building of rude houses, backdrops, and traffic signals for a play village.

Untidy, careless work in any manual skill should be discouraged. However, to drive children to a standard of perfection which they do not yet have the maturity or background of practice to achieve results in making them hate rather than love manipulation of materials. Rapid growth in use of tools occurs from 8 or 9 years on for children who, in their first experiences, find joy and success. This is especially true, needless to say, for children who have some special talent in such work. Most upper elementary and junior high school programs find children delighted with the shop and the cooking laboratories. Some children become quite skillful, being already more adept than most adults.

Clay modeling, too, proceeds through first steps which consist of simply handling, patting, pounding and rolling the material itself. Only at 6 to 9 years of age can most children make anything but the most rudimentary paperweights or birds' nests full of eggs. Bowls, animals, candlesticks with handles, and so forth, follow only when the basic "feel" of the clay has been attained. Thus, as in general body control, we find children mastering certain basic skills before using them in play or to execute ideas.

IMPLICATIONS FOR EDUCATION

In light of the review of studies on the growth of control of the body, certain suggestions to the field of education would be in order. To thoughtful educators who observe children closely, what follows will offer little new. There still persists in general educational practice, however, much that is in direct conflict with what is known of the growth of children. Hence it may prove worthwhile to make some suggestions.

Nursery School. The schedule should be free; the activities offered should encourage climbing, balancing, pushing, pulling and other large muscle coordinations. "Drawing" and painting should be on large sheets and free to progress through the scribble and experimenting stages. Clay work should allow for pounding and manipulation without expectation that anything at all complicated will be produced. Scissors cutting at 3 years is mainly getting success at free slashes, and at 4 years is only beginning to follow a line. Block building follows simple patterns and only at 4 years grows more complicated. Rhythms should not tax children by demanding galloping or other complicated forms of movement.

Toilet facilities should be fitted to the size of the children, should be immediately available, and adequately

complicated rhythm work and dancing, games requiring exact throwing and catching of balls, and other tests of skill. This is a period when keen interest in competition leads many school people wisely or unwisely to encourage competitive track meets and other forms of individual athletic matches.

As pointed out before, physical skills are of such importance at this age that much social contact centers around them. The child who does not have the motor skills to play ball, or roller skate, or to participate in some of the motor activities which occupy his age-mates is likely to have a lonely time. Children who do not develop these skills offer a problem to the teacher or group worker. Individual coaching to improve skills may prove useful in helping children to make group contacts.

Depending upon experience and interest, many girls as well as boys are fairly adept during the elementary school years in the use of hammer and nails, saws, and shovels. Boys as well as girls can carry dishes of soup or glasses of milk or cans of paint water, can straighten up a disorderly room, putting books, crayons, and so forth, away neatly. Greater freedom in dress and movement for girls in the past century has done away with the idea that girls are less interested in vigorous physical activity than boys. Until adolescence they scoot, swing, climb, run, skate, and ride with wide individual differences but, in general, almost as skillfully as boys. Boys, on the other hand, with recent emphasis upon camp life, are proving to be skillful in dishwashing, cooking, bed-making, and mending. Self-consciousness about what is boy's work and what is girl's work seems to be largely the product of adult-implanted ideas which help to preserve a cultural tradition. However, boys as a whole seem to be somewhat more inclined naturally to more vigorous physical pursuits, whereas girls quite spontaneously tend to doll play and similar feminine activities.

Junior and Senior High School. As we have seen, the peak of physical skills for girls occurs around 13 to 14 years of age. It still remains to be determined whether the slacking of physical skills for girls after this age is a change in potential motor abilities or a reflection of inadequate physical education programs in later junior high school and in senior high school. It is more likely, however, to be a reflection of our cultural expectation that girls become less active and more feminine as they reach sexual maturity. Careful planning of physical education programs adapted to the girl's growing interest in femininity should capture interest and could do much to stabilize at this age a genuine love of bodily activity which will last through life.

Boys carry the potential motor capacities for continous improvement of physical skills throughout high school if the high school provides a program which can develop these capacities. Good physical education programs for boys, ages 9 to 15, have been found to contribute substantially to physical fitness (Clark and Degutis, 1962). Undoubtedly the cultural pattern which sets a premium upon sports and enhances the prestige of the outstanding athlete has a good deal to do with boys' interest in continued improvement.

Even though boys' interests and skills develop consistently throughout adolescence, it should be remembered that there are wide variations of physical maturation within any group of junior and senior high school boys, with consequent wide variation in skills. Stereotyped programs at this age may place some boys under strain while failing to challenge others. Moreover, whatever the level of skill for any individual boy at any given time, changes occur rapidly at this time, and skills may be very different

at the end of a semester than they were at the beginning. Great flexibility of physical education programs should exist, allowing for much individual variation in level of skill at any one time, and also providing for each individual to change his participation as his abilities change, even if this change must be made within any given semester's program. In any highly organized team sport, or in activities requiring highly developed individual skills, care should be taken to classify participants according to their skills so that a maximum of satisfaction may be obtained by the young people.

There is a further reason for variation in school patterns and expectations in junior and senior high school physical activities. Many children at this age find themselves "out of things" not only because of physical immaturity and awkwardness but because of heart defects, orthopedic (postural and bone) defects, or lagging energy due to rapid growth or poor nutrition. Logan (1958) warns against competitive contact sports for preadolescent children, since diversity in size and maturation may result in injury for the younger boys. If a too great premium is placed upon motor skills, such children develop feelings of inferiority because they may fail to gain the prestige or confidence necessary for enough social contacts to provide social learnings. Thus, there may be added to a motor handicap a social handicap as well. Some plan should be kept in mind for helping such children to develop other skills which will be useful to them socially. Painting, storytelling, music, craftwork of all kinds, and interest in nature can be called upon to help.

Whether or not the tapering off of girls' physical skills at adolescence is innate or the product of cultural expectation is, perhaps, immaterial. That boys and girls differ in athletic interest and skill at an age when interest in each other becomes especially keen is of significance in our planning for them. Programs planned for boys and girls together should demand only such simple motor skills as folk dancing or certain group games of low organization.

EXPERIENCES TO VITALIZE CLASSWORK

1. Look up the topic of motor control in the current literature (since 1960). What findings corroborate or refute the material in this chapter?

2. Observe a physical education program in an elementary school. Was there enough of the right kind of equipment for the age group you saw? Was there too much equipment? What did the children do with the time they were there? Were they improving their physical skills? Were there adaptations for individual differences of strength, skill and interest?

3. Observe a physical education program in junior high school. Answer the questions in (2). Also observe whether the program fits both the boys and the girls. Were differences in program made to accommodate the wide ranges in physical maturity?

4. For each of the above observations report the general level of motor ability of the children. Is it at, above, or below average? What scatter of ability did you observe in each group, viz., how wide was the range of individual differences? How can a teacher (classroom or physical education) adjust the program best to meet the gross motor needs of the individual children in the group? How long is it reasonable to expect kindergarten children to sit still? fifth graders? high school pupils? In view of this what adjustments in schedule and teaching methods are necessary from primary to intermediate grades? From intermediate grades to high school?

5. In what way does an understanding of the acquisition of early hand-control help a primary teacher to understand and, therefore, to guide the acquisition of handwriting skills? Select some child who is having special difficulty with handwriting. What causes his difficulty; poor motor skill? bad initial methods in handwriting? unfortunate attitudes? Whatever the cause, trace, if you can, its origin. What can be done to help the child learn?

6. How much and what kind of toilet supervision should be given kindergarten children? How much and what kind of supervision with wraps? with putting away playthings? Do you think a kindergarten parent-teacher meeting might benefit from a discussion of clothing appropriate for school? Of cooperation between

home and school in putting away toys? Suggest other topics which might be of benefit to both parents and teachers.

7. Have various members of the class read selections from the readings below and report briefly to the class. Discuss these reports.

SELECTED READINGS

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Co., 1963, Chapter 9.

Crow, L. D., and Crow, A.: Readings in Child and Adolescent Psychology. New York, David McKay & Co., Inc., 1961. Chapter V (28), How the Infant Gains Control over His Arms and Hands, by F. K. and R. V. Merry; (29), Infant Development under Conditions of Restricted Practice and Minimum Social Stimulation, by W. Dennis.

Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958. Selections 8, A Developmental Graph for the First Year of Life; and 9, Neural Maturation as Exemplified by the Achievement of Bladder Control.

INTELLIGENCE

Definitions. INTELLIGENCE. English (1962) defines intelligence as "the individual's ability to perform the usual and expected activities of his age and culture." Baller and Charles (1961) say: "By 'intelligence' we usually mean a person's ability to learn, to adapt, to solve new problems. It is not an entity in itself, but simply a way of behaving." In general we, in this book, shall consider intelligence as a multidetermined functional capacity made up of those perceptual and cognitive functions through which the individual learns about the things, people, and situations around him, and by means of which he deals effectively with them.

PERCEPTION. Crow and Crow (1962) define perception as "the organization and interpretation of sensations in the light of previous experience. Objects, persons and situations, or conditions which are recognized or identified while they are being sensed can be said to be perceived." Solly and Murphy (1962) define perception as "the structuring of stimulation. A percept is an event which is experienced. Perception can best be conceptualized as an instrumental act which structures stimulation." They add: "The biological significance of perceptual learning lies in the flexibility it gives to the perceiving organism. By being adaptive, perceptually, to an environ-

ment, man increases his likelihood of survival."

COGNITION. Webster's dictionary defines cognition as "the act or process of knowing, including both awareness and judgment." Kagan et al. (1960) say: Cognition, or a conceptual response, is "the organization of a stimulus configuration in order to arrive at a basis of similarity among a group of stimuli, and the assignment of a symbolic label (usually a language response) to the organized pattern of similar stimuli." Wann et al. (1962) suggest that concepts are built by a process of seeing relationships, categorizing, discriminating, and generalizing about those things which the child sees, hears, and feels in his environment.

Intelligence: General Considerations. *The development of language* is one of the most important human means of improving and of expressing intelligence, since the child learns to interpret and to react to the world about him far more rapidly when he has the help of verbal communication with people more experienced than he is.

Throughout recorded history, and in much literature, reasoning has generally been considered the crowning achievement of the intellect, the supreme evidence of man's intellectual superiority. It is an outgrowth of the other foundation skills, dependent in important ways upon them.

Native intelligence, as we saw in Chapter 2, is dependent upon *the soundness of the central nervous system.* Although there are cases of fine intelligence in badly deformed or paralyzed bodies, the usual pattern of development of intelligence in the great mass of children depends in many ways upon the use and control of the body's bones and muscles.

Intelligence is entirely dependent upon *the sense organs* (eyes, ears, taste, smell, and touch) for development. A serious deficiency in one of these may not impede intelligent behavior too much, but serious defects of more than one prove fatal to the intellectual development of nearly all children. Helen Kellers are rare, indeed. On the basis of what comes to the child's intelligence through his sense organs he builds increasingly accurate interpretations of the world around him. In other words, he builds increasingly accurate perceptions and judgments. In proportion as these interpretations become accurate, he becomes able to deal with the objects and people around him.

How well the native intelligence develops is dependent upon *the richness of the learning opportunity.* Large families are sometimes thought of as providing richer learning environments, but poorer opportunities for continuing education, than smaller families. This has not been found to be true; family size does not affect intelligence scores (Verma, 1958). Given reasonable opportunity, intelligence develops gradually and consistently with increasing age during childhood and adolescence (Akutagawa, 1959). Serious and prolonged deprivation of learning opportunities, especially in infancy and early childhood, seems to result in permanent damage to intellectual growth which even a rich learning environment in later years can only partially improve. Even though children are usually in formal school by 5 years of age, the best school cannot make up for earlier serious deprivation.

The effect of parents upon intelligence is one not only of hereditary potential to the child, but one of parent-child relationship. Sigel (1960) has found that "there is every reason to suppose that the development of cognition is affected by the child's experience with his parents, although we are not yet sure how the parents, by their relationship and behavior with

their children accelerate or inhibit the child's movement toward more conceptual modes of thought."

One suggestion about how this may happen comes from Bing (1963), who found in her studies that high-verbal mothers seem to have an interaction situation with their children in which they "help" and "push" their children more than do low-verbal mothers.

Other factors influencing the child as he attempts to master intellectual skills are *success experiences in school*, where the teacher's recognition of intellectual competence and the child's successes in *peer group relationships* are important (Kagan and Moss, 1962).

Social class differences affect intelligence test scores, according to Tyler (1963), who suggests that the effect of these differences is probably a combination effect of hereditary differences and early environmental opportunities. She also adds that what now challenges educational researchers is the quest for ways of making the school environment for lower class children better than it typically is.

Prenatal conditions as a factor in mental retardation have been brought to light in a British study, in which illness and stress in pregnancy were reported in mothers of 66 per cent of the retarded children in the study but in only 30 per cent of the control (normal) children (Norris, 1960).

TESTS OF INTELLIGENCE

There are a number of intelligence tests that have been and are being used to evaluate the intellectual capabilities of children and of adults. One of the earliest of these—the Binet Scale—has survived in various revisions and is currently used in a 1960 revision known as the Stanford-Binet. This and certain other tests eventuate in a mental age score for the child, abbreviated as M.A., which indicates the age group into which the child's performance on this or any other given intelligence tests falls. The M.A. divided by the child's chronological age and multiplied by 100 produces an IQ (intelligence quotient). For example, a child of 6 years of age who scores a mental age of 6 years has an IQ of 100; if he scores a mental age of 4 years, his IQ is 66.6; if 8, it is 133.0. If we translate this into a percentile rank, the IQ of 100 being the IQ of the average (middle of the distribution) child, his percentile rank would be 50. If he places at the percentile rank of 90 to 100 he is in the top group; if at 0 to 10 percentile, he is in the bottom of the group. These measures are not the measure of the amount of anything but are simply a way of indicating what a child's average rate of mental growth is, as measured by this particular test.

What all intelligence tests measure is the ability to deal with symbols. The more intelligent the person is, the more complex and abstract these symbols can be. Children increase in this capacity for such symbolic thinking as they grow to maturity, and they also become specialized in the kind of symbols they can deal with most adequately. Thus, both level and pattern of intellectual abilities become important considerations. The Wechsler Intelligence Scale for Children (WISC) for ages 15 and below includes many of the same kinds of questions and tasks that Binet, Terman and others have used but combines them differently so that different types of questions have specific items within each question or task in an ascending order of difficulty, the two main classes being verbal and performance (Tyler, 1963).

There are a number of criticisms of intelligence tests as now constructed and scored. Sigel (1963,a) says that these test responses indicate "what"

the examined person can do but provide no understanding of "how." Sigel concedes, however, that these intelligence tests provide a good basis for predicting academic and vocational success.

Neuhaus (1962), in a study of gifted elementary school children, found that the Binet does not adequately assess space conceptualization, an ability in which some children are gifted. Jensen (1963) says that these tests can be said to be tests of "learning ability" only when we can safely assume that the children tested have had quite similar opportunities for learning the kinds of knowledge and skills measured by the IQ tests.

These tests have been used with considerable success in other countries and other languages than the French and English. In Katanga Province of the Congo, for example, they were used with both Belgian and Katanga students and were found to be valid (Laroche, 1960).

There has from time to time been some question whether the relationship of the examiner to the child and of the child to the examiner might affect the outcome of the tests. Stevenson (1961) found that the influence of an examiner of the opposite sex from the child was greater on the test results than when the examiner was of the same sex. Borstelmann (1961), however, found the sex of the examiner was not a significant variable in the test responses of young children.

Tests for Young Children. The Stanford-Binet test is designed for use with children as young as 2 years. Certain developmental standards for infants, such as Illingworth's, are helpful for measuring a child's status at the time he is observed by the examiner. In a sense, they help to establish the infant's "developmental age." They do not predict how rapid the child's later intellectual development will be (Tyler, 1963). Escalona and Moriarty (1961) say that at age levels below 18 months the use of the term "intelligence test" is misleading. At the preverbal stages of development the group of functions designated as intelligence (and measured by intelligence tests) and applicable at school age and beyond, has not yet emerged. As Bayley (1955) has said: "It is now well established that we cannot predict later intelligence from the scores made in infancy." Escalona and Moriarty combined infant tests with clinical appraisal at 20 to 32 weeks of age, and found that, when thus combined with skilled clinical appraisal, the infant tests significantly predicted differences in later intelligence range. They concluded that infant tests administered under optimal conditions at 20 weeks of age can approximate the prediction of later intelligence range if the environmental conditions (between tests) are relatively stable and benign. Results were best when the Cattell and the Gesell development schedules were used together, rather than when one or the other was used.

Illingworth (1962) states that the popular belief that developmental tests in infancy are of no value lies in the fact that studies on which that opinion was based were made on selected groups of babies, from which mentally subnormal ones were excluded. He adds that a follow-up study of infants thought to be mentally retarded in the first year, excluding mongols, cretins and hydrocephalics, showed that the diagnosis of mental inferiority can be made in infancy with a considerable degree of accuracy. He concludes that there will probably never be a high correlation between tests in infancy and those in later childhood except in the cases of mental subnormality and in the detection of severe visual or auditory impairment. Dameron (1962) used the California First-Year Mental Scale at monthly intervals in a study of 12 infants with mongolism, beginning during the first 6 months and ex-

tending through the eighteenth month. The results showed noticeable deviation from the average level with increasing age. He concluded that infant tests may yet be shown to be diagnostically useful in case of severe retardation in which the medical diagnosis is negative.

Intelligence Tests as a Measure of Dynamic Personality Functioning. Dynamically oriented psychologists have expressed concern about the gap between intelligence testing and developmental testing on the one hand, and projective techniques on the other. Intelligence and developmental tests have too often been conceived as static measures of ability, whereas projective techniques were from their inception used in a dynamic way to gain insight into personality organization, the nature of the patient's defenses, and the areas of conflict.

Fromm (1957) and her co-workers hypothesize (1) that each subtest of standardized intelligence and developmental tests taps wider dimensions of the total personality than intelligence alone; (2) that since developmental and intelligence tests investigate ability and learning, they must actually and basically test reality awareness and reality mastery and, therefore, development; and (3) that a comparison of infant tests with middle and later childhood intelligence tests may show the changing balance between primacy of drives and the developing ego and superego.

After a detailed study of five infant and preschool developmental tests, eight children's intelligence tests and one test of learning aptitude, Fromm and her co-workers found that even at the earliest developmental levels a number of personality dimensions are involved in each subtest, and that each answer by a child to a subtest item potentially reflects basic aspects of the subject's total personality.

Psychoanalysts conceive intelligence as an integral part of the total personality. They hypothesize that intelligence tests must tap wider personality dimensions than pure intellect—in particular, ego development.

Constancy of the IQ. Gardner (1963) says that "the concept of an 'IQ' score derived from a variety of procedures is a heritage worthy of continued critical examination." Haworth (1962) defends it, having found that children tested at kindergarten, first and second grade levels tend to respond in dynamically consistent fashion on individual and group tests over extensive periods of time.

Holowinsky (1962) studied 57 subjects who had been in a training school an average of 32 years and found no significant change in IQ but did find that there appeared to be no significant mental growth beyond age 17. Wiener et al. (1963) studied subjects at 3 to 5 years and again at 6 to 7 years for IQ changes. Of three groups of subjects, they found that one group had upward IQ changes of 13 to 22 points; the second and third groups had declining IQs of 13 to 22 and 9 to 12 points, respectively. Subjects whose IQs had risen differed from those whose IQs declined in the fact that more of them had been born prematurely, were of higher socioeconomic status, and were more emotionally disturbed than were the IQ decliners at ages 3 to 5 years. The authors conclude that this strongly suggests that IQ changes are not solely chance phenomena associated with unreliable measuring instruments (as some writers have suggested) but are, rather, a reflection of processes regarding social class, emotional adjustment and possible minimal brain damage.

Zaggo (1960) concluded from studies done at the Sorbonne in Paris that "the IQ, while rather more stable than expected, is a poor indicator of later adjustment because personality factors are more important than IQ

alone." Tyler (1963) summarizes the extensive research on the constancy or inconstancy of the IQ by saying that psychologists and educators have concluded that, to be on the safe side, they should retest children every few years if they are going to base decisions about such matters as school placement on test scores. She warns against using an outdated IQ record on a child as an indicator of his present rate of growth.

INTERPRETING THE IQ. Though more difficult to interpret than percentile ranks, intelligence quotients (IQs) are often recorded for, and used in, the interpretation of intelligence test scores. Chronbach (1960) has developed a very useful table on expectancies of performance at various IQ levels. (See Table 2.)

TABLE 2. *Expectancies at Various Levels of Mental Ability*

IQ	*Expectancies*
130	Mean of persons receiving Ph.D.
120	Mean of college graduates.
115	Mean of freshmen in typical 4-year college.
	Mean of children from white-collar and skilled-labor homes.
110	Mean of high school graduates.
	Has 50–50 chance of graduating from college.
105	Has 50–50 chance of passing academic high-school curriculum.
100	Average for total population.
90	Mean for children from low-income city or rural homes.
	Adult can perform jobs requiring some judgment, e.g., operating sewing machine or assembling parts.
75	About 50–50 chance of reaching high school.
	Adult can operate small store, perform in orchestra.
60	Adult can repair furniture, harvest vegetables, assist electrician.
50	Adult can do simple carpentry, domestic work.
40	Adult can mow lawns, do simple laundry.

INDIVIDUAL DIFFERENCES IN INTELLIGENCE. As we see, there are marked individual differences in the amount and quality of intelligence possessed by each individual. In overall intellectual qualities boys differ from girls, boys being on the whole superior to girls in mathematical reasoning and mechanical aptitudes, while girls exceed boys in vocabulary, verbal fluency, and straight memory (Berelson and Steiner, 1964).

The Retarded Child. The mentally subnormal child who is subnormal from birth or before birth is backward in all fields of development except, occasionally, in the gross motor field; he is relatively more retarded in social development, such as smiling, vocalization, interest in his surroundings, alertness, social responsiveness, powers of concentration and speech than in other fields. Such individuals can, under certain circumstances, make use of accumulated experience but lack the ability to deal with complexities (Myers et al., 1961). Retarded children tend to be markedly inferior to normal children of equivalent mental age in the accuracy of verbal transmission of information. The main factors influencing the distortions are sentence length and the content of the sentence (Nakano et al., 1960).

If a child acquires the mental subnormality after a period of normal development, he may at first be normal in motor and manipulative development, but obviously defective in interest and alertness. It follows, then, that one should never even consider mental deficiency as a diagnosis when the child is retarded only in individual fields of development, such as walking, speaking, or sphincter control (Illingworth, 1962).

There are certain biochemical factors found to be associated with the syndrome and etiology of mental retardation. These include: abnormalities of carbohydrate metabolism and

storage, amino acid or protein metabolism or excretion, and defectiveness of lipoid material (Rundle, 1962). Occasionally a "slow starter" who is retarded in all fields of development, and who gives the appearance of being mentally defective, will catch up to the normal (Illingworth, 1962). Mentally retarded children must be taught many things that normal children learn spontaneously. They are often caught in a vicious spiral that is negative and limiting to social development. Lack of social experiences leads to social retardation and ineptness in chronologically appropriate social skills, accompanied by emotional difficulties arising from feelings of rejection and deprivation. These feelings, in turn, limit the opportunities to gain more social experience and greater social ease (Gershenson and Schreiber, 1963).

One class of retarded children are known as "brain-damaged." Such children, when compared with normal children at the preschool level, have been found to be impaired significantly in all areas, but not equally in all areas measured. Areas of personality functioning were significantly less affected than was nonpersonality functioning, such as motor, perceptual-motor, and conceptual performance (Graham et al., 1963). Occasional children who are adequate in intelligence as measured by IQ tests are, nevertheless, brain-damaged children (Benton, 1962). From the motor standpoint, these children are overactive, restless, awkward in locomotion and in the performance of skilled movements. They may display postural rigidity and motor speech difficulties in the form of poor articulation and disturbances of rhythm. As speech does develop in the subnormal child, it parallels the speech and language developmental patterns of the normal child (Mecham et al., 1962). Intellectually, retarded brain-damaged children are distractable and low in ability to concentrate; they show visual-motor disabilities, weakness in arithmetic, reading, and abstract reasoning. In personality they reveal impulsivity, outbursts of aggression, and a lack of affective bonds between themselves and other people. In the younger children there is a tendency to touch, suck, or chew objects. Some of these children, upon medical examination, show no clear neurological signs of brain damage, but the behavior described above indicates at least "minimal" damage (Benton, 1960).

Cerebral-palsied children, compared with educable retarded and normal children in visual and visual-motor perceptions, did not differ in the order of difficulty found for these tasks from the normal children, when mental age was equated for the two groups (Wendell, 1960).

THE RETARDED CHILD AND HIS HOME. Although, as we have seen, the home and its attitudes toward children are of crucial importance to their development, one study of retarded children indicates that neither parental awareness and acceptance of the retardation, nor the reality with which the parent viewed the present and future needs of the child, were related to his over-all growth, to his progress during a year of special education, or his mental age, or his chronological age, or his IQ (Stoddard, 1959). Strauss (1963) found from interviews with mothers of retarded children that "sustained interaction with retarded siblings comes to be regarded as a duty by the normal siblings," and that, in the performance of this duty, the normal sibling internalizes welfare norms and turns his life career toward the improvement of mankind, or at least toward goals requiring dedication and sacrifice.

On the whole, however, Taba (1964), in a study of culturally deprived children (the problem children,

retarded, slow learners, underprivileged and under-achievers) found a predominance of homes with a limited educational tradition and little "know-how" about school and its expectations. The parents of many of these homes had little understanding of the requirements for success in school and could not, therefore, help their children with academic content, or kindle aspiration for continued education.

THE RETARDED CHILD IN AN INSTITUTION. Although separation from home for institutional living increases the anxiety level of normal children, it does not appear to increase the already high anxiety level of the retarded child (Knights, 1963). This level of anxiety may perhaps be associated with the fact that handicapped children do not progress as do normal children from the behavioral dependence of infancy in the direction of independence and maturity of normal children (Jordan, 1962).

As in the care of normal children, the mother usually assumes more care than does the father for handicapped children. As children growing up within the family, handicapped children tend to remain in the role of a younger child. In such a family, the normal girl siblings seem to be more affected by the presence of a handicapped child than is the normal boy sibling, perhaps because the girl usually does more "baby tending."

The arrival of a retarded child in the family and his growing through the years presents some problems in the parents' marital adjustment (Farber, 1960). Zuk (1959) found guilt to be an important psychological process in parent-child relations when the child is defective. Parents with a strong religious orientation tend to accept retarded or otherwise defective children more readily and completely than do nonreligious parents (Zuk, 1961).

Currently, there is a trend to place defective (often termed "exceptional") children in regular, rather than in special classes when their needs can be met through providing special equipment and extra help for teacher and pupil. These trends have placed additional emphasis on providing all student teachers in teacher-education institutions with a general orientation to the problems of exceptional children (Kirk, 1962).

Legislative Aid for the Handicapped Child and His Family. Such aid has been established in a number of states, and recently by the federal government. On October 31, 1963, President Kennedy signed into law the first federal legislation to extend education benefits to *all* handicapped children. The bill provides government scholarships and fellowships for the preparation of teachers for the mentally retarded and other handicapped children; for supervisors, administrators, college teachers and research personnel in the education of the handicapped. The act is called The Mental Retardation Facilities and Community Health Centers Construction Act of 1963. The law authorizes, over a period of four years ending June 30, 1967, appropriations of $26 million for project grants to help public and nonprofit institutions build centers for research in mental retardation and related aspects of human development; and $32.5 million for project grants up to 75 per cent of cost for the construction of university-affiiliated facilities for the mentally retarded. These are amendments to the Social Securities Act and concern prevention through improved services and research in these areas of human welfare. They are administered by the Children's Bureau and the Public Health Service under delegation of authority from the Secretary of Health, Education, and Welfare. They stress the importance of prevention—prevention of the physical conditions in mothers and infants that lead to mental

retardation, and prevention of the social and emotional conditions that block the development of whatever potential retarded children have.

The Gifted Child. In contrast to the retarded, these are gifted in intelligence—those who develop more rapidly and to higher levels than other children in thinking, reasoning and making judgments. Rated in terms of IQ, those children who measure 140 or over are four or five of every thousand; those who measure 130 or over are nine or ten out of every thousand. These children do not always turn out to be adult geniuses since some able people are not trained to make the best of their abilities or do not take a desirable amount of responsibility for the use of the ability and training they possess. Genius, too, is made up of other talents than sheer intellect, the creative abilities being at the root of much outstanding accomplishment. However, superior children, as a whole, remain superior throughout life (Jensen, 1963). The creatively gifted child does not always have a concomitantly high IQ (Getzels and Jackson, 1961). Some gifted children never develop a well-rounded personality of worth and substance, although they may be numbered among leaders of the world of art, music, or science. The personality profile of the gifted adolescent is within normal limits. When the intellectually superior person deviates from the normal, this deviation is a clue to other factors than his high intelligence (Kennedy, 1962). The psychological needs of the gifted child are the same as for any child (Grimes and Allinsworth, 1961).

School Achievement and Intelligence. The relationship of intelligence test scores to school achievement, according to Grimes and Allinsworth (1961), is an established fact. There are, however, achieving and nonachieving gifted children (Norman et al., 1962). In motivating gifted children to achieve, schools sometimes accelerate them. When this is done the gifted child, as a rule, has little difficulty in making social adjustments (Edwell, 1958). Teachers, however, are not particularly able in their judgments of which children are gifted (Baldwin, 1962).

One would expect that the general level of intelligence would be positively correlated with academic achievement. Although intelligence, as a rule, is the most significant factor in the determination of academic achievement, factors of motivation are also of importance (Keller et al., 1962). There are, so to speak, under-achievers (as measured by their intellectual potential), and over-achievers. A number of factors are involved here. In a study of the literature on bright high-achieving and under-achieving high school boys it was found that the parents of the high-achievers gave their children more praise and approval, showed more interest and understanding, were closer to their children and made them feel more "family belongingness" (Morrow, 1961). In contrast to this, parents of under-achievers were more domineering and overrestrictive and used more severe and frequent punishments; they sometimes babied their children, or pushed them excessively; there were more tensions in these homes and more disagreements about standards of behavior expected of the children.

LEARNING AND HOW IT COMES ABOUT

Theories of Learning. Before discussing the specific steps by which the child becomes acquainted with the world of things-outside-of-himself, it may prove helpful to understand something of the various theoretical approaches to the process of learning

which have been, and continue to be, widely discussed by psychologists.

TRADITIONAL VIEWS. William James, one of the earliest psychologists, in his Principles of Psychology (1890), and E. L. Thorndike in the early 1920's, emphasized habit formation as the foundation for learning. The theory was that if the learner experiences an act which proves to be satisfying to him, this act tends to become fixed in his behavior repertory. If the act proves to be dissatisfying (or painful) it tends to be eliminated from the individual's behavior repertory.

The applications of this theory to practical education are fairly evident. Combined with Dewey's "learn to do by doing" philosophy, the schoolroom became a buzz of activity by individual pupils presided over by "cheerful" and "encouraging" teachers, who urged children to "do what you want to do." This produced the story among some educators about the child who one day said, "Teacher, do I *have* to do what I want to do today?" He seemed to be asking to have vistas opened for him beyond those already familiar to him.

Applied to the home, this combination of trying to make all learning pleasant and the assumption that the child's routines and other behavior should stem from *his* initiative resulted in many homes in overpermissiveness and lack of parental leadership. In some homes it resulted in loss of spontaneous interchange between parent and child.

REINFORCEMENT. In the 1920's and 1930's two major schools of psychology emerged: behaviorism and psychoanalysis. The behaviorists proceeded on the Learning Theory Concept of Reinforcement (Mussen and Conger, 1963). Under this theory the standard learning situation is almost universally defined and measured in terms of a change in the probability, or frequency, with which a given stimulating situation evokes a response (or instances of a response class) that has been designated as "correct" by the experimenter (Estes, 1960). The subject (human or animal) is exposed to a given stimulus or series of stimuli (S), and his reaction or response (R) is observed. The working symbol for this is S-R.

MEDIATING PROCESSES. It eventually became evident to the experimenters that different subjects responded to the same stimuli with different reactions. The response of the subject to a given stimulus was affected by some mediating process in the individual subjects. "Among the response-produced stimuli are those elicited by the implicit anticipatory responses which, as a result of the prior association with rewarded acts, both motivate and guide the individual. These attributes of drive value are the affective properties of attitudes that distinguish them from those response-produced stimuli which lead to instrumental responses. . . . In such a rationale attitudes are hypothesized to act as mediators of approach and avoidance tendencies" (DeVesta, 1962).

In a study of mediating processes in children, Kendler (1963) defines the mediating factor as "a response, or series of responses which intercede between the external stimulus and the overt response to provide stimulation that influences the eventual course of behavior. These responses may be overt, but are usually presumed to be covert."

Before the above clarifications had appeared, it had for some time been evident that some such processes were a part of total stimulus-response behavior. Skinner, in 1957, began to refer to "intervening variables" which operated between the stimulus and the response to that stimulus.

THE PERCEPTUAL ACT. Solly and Murphy (1960), in discussing perception, refer to a "perceptual act," the word "act" indicating that perception is not a passive "taking in of the environment." They point out that the perceptual act begins before stimulation, since it begins with the individual's expectations about future perceptions. Even before a stimulus can affect us, we prepare for it by attending (paying attention) to the stimulus. Attending begins the moment before stimulation and continues during stimulation. Stimulation itself critically affects the final content of perception. Sensory reactions are, therefore, not a first, but a third stage in the perception process. Solly and Murphy continue their description of what happens in the act of perceiving. They say that between the reception of the sensory stimulus and the final percept, a "trail-and-check" occurs in which the individual's hypotheses (about what he is perceiving) are tested, unconscious assumptions are checked, and materials supplied by the sensory processes are articulated with previously stored memory traces. During this phase, new information sources are triggered which feed back both into the preceding trial-and-check and into the final stage of percepts. This, as we see, is a very complex process in which there is overlapping and articulation or interrelating between the subprocesses. In view of this, Solly and Murphy define perception as "the structuring of stimulation," and they add that "percepts vary considerably in structuredness."

SCHEMATA. Solly and Murphy say, further, that the stimulation the individual expects, looks forward to, are stimuli which have had value for him in the past. The expectations are like "hypotheses" that such and so will occur. In this sense, expectations prepare the individual for receiving perceptual stimuli, perhaps providing activities which will increase the possibility of occurrence of expected stimuli. Such expectations rarely occur in isolation but usually are integrated cognitive schemata into which perceptual materials can be fed. Stone and Church (1957) liken schemata to a "frame of reference."

Skemp (1962) points to a need for a schematic theory of learning. In a learning experiment using two different schemata (each based upon sixteen symbols with associated meanings), two different groups of grammar school boys numbering 23 and 24 boys, respectively, learned one of these schemata, using paper and pencil to attempt constant recall, and were then tested in learning with and without use of the respective schemata learned. The schematic learning resulted in significantly greater numbers of symbols being recalled immediately after learning, and after a period of four weeks.

VERBAL SYMBOLS. Important among the mediating processes used by the child (or adults) for sorting out or organizing the stimuli he encounters are linguistic labels and semantic mediators. Learning distinctive names for visually presented stimuli, and learning these names well, aids subsequent discriminations. In fact, the child's tendency to label objects and events is so prepotent that he spontaneously invents and uses verbal mediators, even when the investigator seeks to prevent him from doing so. Just as objects can be organized by labels, so operations can be organized by "verbal propositions" (Kendler, 1963; Spiker, 1963). Although some types of human concept formation can take place without verbalization (Church, 1961), the ability to use verbal symbols is important to the development of general intelligence. According to McCarthy (1954), speech ability in infancy is predictive of intelligence in later years.

Sigel (1963,b) points out that language provides the individual with a set of symbols which refer to parts or wholes, or to the total. Sigel also says that the acquisition of labels is a function of the individual's sociocultural experiences. The particular labels he acquires, and with what accent, reflect his childhood and adolescent cultural background. These labels enable him to identify and to communicate about his environment in those geographic areas in which his particular set of labels is understood.

EFFECT OF VERBALIZATION ON LEARNING. Rosenbaum (1962) examined the effect of verbalization at the time of observation of objects on recognition, and one week later. The source of the verbalization was varied to include self-verbalization and verbalization by others in the presence of the observer. Vicarious verbalizers were either peers or the experimenter. The subjects were elementary school children. Verbalization by all sources was found to facilitate recognition except in the case of self-verbalization in a chorus of four. Verbalization in chorus appeared to interfere with the effect of self-verbalization.

We would suggest that this may mean that teachers who tend to encourage chorus verbalizations of lessons may, by this device, permit the individual children to verbalize more often than would be possible if each child did so on a solo basis. The total learning, however, appears not to be equivalent to the learning that would take place if each child could recite the lesson individually—an impossibility, of course, in the average-sized class.

MORE RESEARCH NEEDED. The learning of a linguistic symbol for an object, act, or situation seems to be acquired on an all-or-none basis; it is either not known at all or it is known completely. Unlike hunger, thirst, pain or sex, the motivation to be rational, to be correct, to structure information efficiently, and to avoid dissonance, uncertainty, and cognitive strain is always present with us. The attempt to explain human cognition on the theoretical bases arrived at from animal experimentation and from human motor learning, say Wright and Kagan (1963), neglects vital issues that need careful attention and explanation on their own right. We are faced with two interlocking questions that must be answered before a theory of cognitive development can be written: How does the child acquire conceptual structures; and what mechanisms must be invoked to explain the abandoning of one structure and taking up of another? At present we cannot answer these questions.

Much as is known about how percepts come about, much remains still to be known. Wright and Kagan, in summarizing the Second Conference on Basic Cognitive Processes in Children (1963), say the range of phenomena and the diversity of propositions designed to account for them indicate that the theoretical bases of "that sector of behavior we call 'intellectual development' are still not mature—there is still no firm theme." They say that the reasons for this lack of general structure can be specified only partially. Theoretical descriptions of intellectual processes such as classification, abstraction, and inference require constructs that deal with perceptions, motives, and responses different from those ordinarily studied by social scientists in the orthodox behaviorist tradition. Responses are the end products of interaction among many component parts. Acquisition of habits typically involves the elimination of errors and the gradual strengthening of a large number of correct segments. The course of this learning seems, according to Wright and Kagan, to be best described by an added law: "Strength of habit gradually increases with frequency of reinforcement."

PSYCHOANALYSIS. Psychoanalysis is not generally discussed as a theory

of learning. We have referred to it earlier as one of the two major schools of psychology which emerged in the 1920's and 1930's. The learning it deals with is the acquisition of feelings and motivations, and the changes in thoughts and actions which result. As a school of psychology it has proceeded on Freud's theory that the primary source of man's behavior is the libido—the physiological basis of motives whose tensions the individual must reduce (Sarnoff, 1962). When this theory has been carried to extremes, it has tended to seek "unconscious" drives which would explain behavior in terms of the psychoanalytic theory, while sometimes passing over the more obvious or simpler explanations. In the 1930's psychoanalysis was so little understood, yet so widely adopted as a method that, for example, cases of enuresis were sometimes psychoanalyzed before any attempt was made to locate possible physical explanations of the difficulty. On the other hand, enuresis was too often treated as a physical difficulty in cases where it was essentially an expression of psychological stresses or conflicts. There were, then, cases in which psychoanalysis was used when it should not have been, and other cases when it should have been used and was not.

PIAGET'S CONTRIBUTION. As a sort of midway point between behaviorism and psychoanalysis, Piaget's work in Switzerland came to the attention of leaders in the teaching and clinical areas of psychology. In recent years there has been a great surge of interest in the United States in the work of Piaget (Rosenblith, 1963). Piaget, in close observation of his own children from 1936 to 1945 and, later, from 1953 to 1961 with other children, observed these children in carefully structured situations. From these studies he has been able to describe the progressive changes in their reactions with their everyday circumstances.

Hunt (1961) reviews five major themes which dominate Piaget's theoretical formulations. The *first* concerns the continual and progressive change in the structures of behavior and thought in the developing child. The *second* concerns the fixed order in which successive structures make their appearance. The *third* concerns the invariant functions of accommodation (adaptive changes to outer circumstances) and of assimilation (incorporation of the external into the inner organization with transfer or generalization to new circumstances) that operate in the child's continuous interaction with the environment. The *fourth* theme concerns the relation of thought processes to action. Thought processes are conceived to originate through a process of internalizing actions. The *fifth* theme concerns the logical properties of thought processes.

Piaget has, according to Flavell (1963), given us more information about intellectual development than anyone else. It was Piaget who demonstrated that many 4 year olds will blithely assert that the weight of a ball of clay changes as its form changes; that the number of buttons in a row alters when the buttons are spaced out with wider spaces in between them; that two events do not necessarily take the same amount of time to occur just because they started and stopped at the same instants. Piaget has made clear that such basic realms of human experience as space, time, number, and causality exist for the individual only at the end of a complex evolution of growth and experience with these activities. We are not born with such understandings.

Piaget's theory of intellectual development assigns a central role in the child's conceptualization to the principle of "conservation" (Piaget, 1950). For example, the child realizes the principle that a particular dimension of an object may remain invariant under changes of other, irrelevant

aspects of the situation. Children who lack "conservation" will assert that the weight of two objects has changed when the shape of one of them is altered, or that numerical quality between two collections of objects no longer holds following a change in the length over which they extend. This phenomenon in the child's thinking holds for a variety of other dimensions, including those of volume, area and length, and it represents a manifestation of an immature level of functioning which demonstrates the child's inability to conform to the operational structures of logical thought.

Wholwill and Lowe (1962) point out that although Piaget has described some of the steps which precede "conservation," little is known thus far about the specific ways in which the transition from lack of conservation to the presence of conservation takes place. They suggest that the domain of number lends itself well to an investigation of the development of conservation. We shall discuss their findings from such a study under the development of the concepts of number (p. 291).

Parsons (1958) has written an introduction to Inhelder and Piaget's *The Growth of Logical Thinking from Childhood to Adolescence,* in which she says:

> "Piaget has no grounding in motivational theory, and for the most part has chosen problems relative to cognitive functioning taken in isolation from any motivational variables. Within his own framework, the Piaget method is both flexible and coherent and in a sense reconciles clinical and experimental approaches. Piaget's basis is genetic—i.e., intelligent behavior is analyzed with respect to the growth continuum. Piaget's method is systematic and empirical. Various aspects of the childs' intelligence are taken up in turn and examined through the presentation to large numbers of children of the same well-defined questions. His approach is more philosophical than scientific in the sense that science tries to relate everything to everything else, whereas Piaget tries to delimit problems and to find scientific methods for dealing with them."

In Inhelder and Piaget's book the over-all aim was to trace the development of intelligence as it comes to deal with increasingly complex problems in increasingly more efficient ways. In this work Piaget delineates four stages in the childhood and adolescent progress toward adult forms of thinking. These are quoted below with the permission of the authors:

> The first stage (birth to about 2 years) Piaget calls the *sensori-motor stage.* It is one in which the child learns to coordinate perceptual and motor functions and to utilize certain elementary schemata (generalized behavior patterns or dispositions) for dealing with objects external to himself. He comes to know that such objects exist even when he cannot see them or touch them, or be otherwise aware of them.
>
> The second stage (2 to 6 years) Piaget calls the *operational* or *representational stage* which extends from the beginning of organized symbolic behavior—language in particular—to about 6 years. Although the child comes to represent the external (outside of himself) world by symbols, he does so from a motivational model—things happen because someone "makes" them happen. For example, he believes that the sun moves because "God pushes it"; the stars, as he does, have to go to bed. He is not yet able to separate his own goals from the means of achieving them.
>
> The third stage (7 to 11 years) is one in which the child can carry out *concrete operations;* these in turn greatly enhance his ability to organize means of achieving things independently of the direct impetus toward getting what he wants. Through these concrete operations he can deal with the properties of the immediately present world.
>
> The fourth stage is the final childhood stage preparatory to adult thinking, and develops between 12 and 15 years of age. It involves the appearance of *formal operations* as opposed to concrete operations. It is characterized by the development of the ability to use hypothetical reasoning based on the

logic of all possible combinations and to perform controlled experimentation. Piaget uses the term "operation" here to mean a type of action; it can be carried out either directly, in the manipulation of objects, or internally, when it is categories or (in the case of formal logic) propositions which are manipulated. Roughly, an operation is a means for mentally transforming data about the real world so that they can be organized and used selectively in the solution of problems.

Feedback in Perception. Recently, there has appeared in experimental work on perception the idea of the importance of "feedback." Solly and Murphy (1960) say that "a clear, definite and well organized percept is in itself rewarding, and reinforces a perceptual act." As the child experiences a new perception he tends to seek further perceptual experience so that, with practice, his perceptual acts reinforce themselves to the extent that the final percept is clear and definite. These authors add that this does not deny the importance of ordinary external rewards and punishments. It simply means that new percepts in themselves are more intrinsically reinforcing than external reinforcers are.

This may explain why young children can be so completely preoccupied with exploration of the things, places and people in their environment. Murphy (1962) comments on this with her characteristic thorough understanding of children: "Seldom do we think of the child as a small human being, carrying on his own struggle to make sense out of life, to meet his own needs, to master the challenge presented by life—but differing from adults especially in the proportion of newness to which he is exposed." A critical period in the maturation of perception comes when the child is capable of checking his responses against a background of already accumulated relevant perceptions (Green and Smith, 1963). In a real sense, stimuli come to reflect the individual's previous experiences with this or with similar stimuli. The stimulus, as it affects the individual's perception of it, is colored by the effect that similar or identical stimuli have had on the individual. The old S-R (stimulus-response) "bond" is now understood as an S-O-R "bond" (stimulus—as perceived by the organism—is affected by the organism's responses to previous similar or identical stimuli). As Solly and Murphy (1960) put it: "We perceive more readily and more clearly those events we expect to perceive." The O represents the mediating processes referred to earlier.

"Perceptual responses involve memories and judgments, lead into thought and imagination, and the latter influence subsequent perception" (Solly and Murphy, 1960). "The occurrence of a specific response in a given situation is the outcome of its successful competition with other responses which themselves have a certain probability of occurrence in that situation" (Bindra, 1961).

We see, then, that the "O" in the S-O-R "bond" becomes a "mediator" between the stimulus and the response. We refer to "mediational systems," especially important being the role of verbal mediations, which develop in early childhood and which have primary responsibility for the elaboration of simple associative (S-R) learning into the abstract, flexible, selective, organized, cognitive behavior of the human adult (Wright, 1963).

Perception and Motion. When we see the speed of the complicated reactions of the goal man in an ice hockey game, we may wonder how the visual perception of the multiple images of the other players and of the puck can be routed from the retina of the eye to the brain, to the scores of muscles in the legs, trunk, arms, etc., as he

counters the puck and the oncoming players. Recent studies have indicated that many of the nerve impulses in such action do not have to travel to the brain and back to the muscles involved (Smith and Smith, 1962). Experimental evidence supports the theory that much coordination occurs at the internuncial neurones (those neurones which link sensory and motor nerves). In the internuncial circuits there is almost instantaneous reaction to a perceived situation involving a high-speed and complicated pattern of action. Such coordination of neurones and ganglion organs makes them serve, in coordination of movements, as organs of integration of the sensory stimuli (Horridge, 1963).

INDIVIDUAL DIFFERENCES IN PERCEPTUAL AND COGNITIVE BEHAVIOR

Some children are more analytical in categorization and in learned analytical concepts, boys on the whole proving more so than girls (Lee et al., 1963). Some children have an analytical tendency, questioning, testing, inventing as they go (Spiker, 1963). There are preferred modes of conceptualization, which Sigel (1963) refers to as "*cognitive styles.*" The cognitive style dictates the cues the individual will use, but not necessarily the level on which his intelligence functions. It is "the preferred use of a specific class of conceptual responses" (Kagan et al., 1960). It refers to the "modes" an individual employs in perceiving, organizing and labeling various dimensions of the environment. Language provides the individual with a set of labels which refer to various aspects of the environment. These labels may refer to parts or the whole, to attributes, or to the total. The acquisition of such labels is a function of one's sociocultural experiences (Sigel, 1963). It differs from boys to girls, especially in the psychological role played by the particular cognitive style of each individual (Sigel, 1963,a). There is every reason to suppose that cognitive style is affected by the individual's experience with his parents (Sigel, 1960).

Individual behavior styles can be delineated in the first months of life (Birch et al., 1962). These styles can be defined in terms of activity level, threshold of responsiveness, rhythmicity of functioning, adaptability, intensity, approach-withdrawal, mood, persistence, and distractability. They not only distinguish one infant from another but persist as characteristics of individuality in subsequent years. These behavior patterns are viewed as the result of the interaction of organismic and environmental factors (Rutter et al., 1963).

Wilkin et al. (1962) found that people who were grouped together on the basis of conceptual style resembled one another in particular aspects of *how* they satisfied their needs, resolved their conflicts, handled their aggressions, formed their attitudes. But they differed in *what* they wanted, were in conflict about, became angry over, believed in, and in the life themes that ran through their histories.

DEVELOPMENT OF SENSE PERCEPTIONS AND JUDGMENTS

As was said above, intellect grows in most important ways through the constant accumulation of impressions which come into the central nervous system from the surrounding world by means of the sense organs and the central nervous system. One may see and hear, smell and taste and feel, but

sensation alone is not enough. Until, through experience, sensation comes to have meaning and to be understood, one's reaction to the world remains unintelligent. One does not automatically judge the size, shape, distance, or other qualities of objects; one learns to judge them. (This will be explained more fully later.) Probably one of the clearest differentiations between a mediocre and a brilliant person is to be found in the speed and accuracy with which he "sizes up" situations and in the discrimination with which he reacts to them.

The Newborn. "The transformation of an apparently dimly seeing, chaotically moving, avidly sucking, yet sleepy neonate into a smoothly coordinated, alert, and constructive adult involves many processes, not all of which we understand" (Murphy, L., 1962).

At birth, visual, auditory, tactile, olfactory, pain and gustatory sense organs are all capable of responding to appropriate stimuli. Each infant differs in the way he adapts to the new stimuli he encounters from birth (Bridges, 1961). Although impressions come in to him through his sense organs, he does not interpret these impressions. An important part of learning in the first days and weeks of postnatal life consists of learning how to use the eyes to see with, the ears to hear with, the nose to smell with. Once the infant has learned to see and hear and to use his other senses, his intellect begins to store up a multitude of impressions from the outside world. Also important not only to the intellect, but to the development of personality and emotional reactions as well, are the impressions which come to the baby from his own body. Feelings of hunger, of fatigue, of need for movement, of well-being and security or of discomfort and insecurity are among his inner impressions. All these sensations and impressions build the bases for later intellectual behavior.

We do not know just how much newborn babies see or hear or taste or smell or feel. They have no language but the cry or relaxed well-being, a start or jerk or reflex action with which to tell us their reaction to the various stimuli which affect them. We have many excellent studies of the sensory equipment and sensory reactions not only of neonates (newborn children) but also of fetal (intra-uterine) reaction.

The Changing View of the Infant. Infant studies during the 1930's and 1940's were interpreted to mean that all normal infants at birth had a repertory of predictable behavior—that individuality in behavior developed from certain fixed behavior present at birth and common to all infants. Recent studies made possible by new techniques of observation and measurement, indicate that infants differ from one another in behaviors which can be detected in the first days of life, and which may perhaps remain as stable differences during the early months of life (Kessen, 1963). Stambak (1956) has segregated two groups of infants, the one tending to be active, the other to be quiet, and has discussed the relation of these tendencies to such important developmental changes as those involved in walking. Another investigation concerns the stability of the infant's behavior during conditioning experiences during the first 6 months of life (Papousek, 1961).

Until recently it has been assumed that newborn babies behave only on a reflex basis, that they cannot see or hear with any understanding during the first weeks of life. Research since 1955 has revealed that the newborn child has substantial visual resolving powers. He can, for example, "track" the movements of an experimenter's finger as it moves before him (Blau-

velt, 1960). This tracking takes place without any special tuition—it is "built in." The infant can pick up approaching stimulation and can reduce the distance to it very quickly, viz., he can "find" the approaching breast or bottle. These and other studies suggest that the newborn has far greater capacities for sensory discrimination and for response than could have been guessed a decade ago (Kessen, 1963).

Yarrow (1963) comments that today we find many dimensions of the infant's early environment are of much greater significance than weaning or toilet training. We need to know to what kinds of stimuli—in which modalities, and of what intensity—infants are sensitive and responsive.

INFANTS ARE DISTINCT INDIVIDUALS. Wright (1963) states that the infant is not merely a passive recipient but actively participates in the production of the stimulus information to which he responds. The infant's reactions are not all determined by "instinct" and hence "predictable." Each infant is an individual psychological being, widely different from other infants in behavior relations from the first days of life. Researches by Bell (1960) and Kessen (1961) tend to support a strong generalization that stable individual differences in a large number of behaviors, such as sucking, general movement and reactivity, exist from birth. We do not yet know how these differences are related to differences in the infant's environment. We do know that each newborn has an extended sensory and response range of his own (Sainte Anne-Desgassies, 1960; Prechtl, 1961), and that he is an active participant in his own experience, and establishes an immediate reciprocal relation with his caretaker (Kessen, 1963). He appears to be capable of a remarkable amount of "stimulus coding," of adaptive responses and of early learning responses—responses not as yet clearly understood or explained (Kessen, 1964). In any case, somewhere between 17 and 30 weeks, the child appears to shift from being attached to human beings at large to being attached to one or two or three human beings (Ainsworth, 1961).

INFANT–MOTHER INTERACTION. Blauvelt and McKenna (1961) studied infants by analyses of carefully structured film sequences. They found that the newborn infant has a capacity to respond to the stimulation of its mother with activity which orients the baby to its mother, stimulates her, and gives her information about the infant's capacities. Babies are not only manipulated by their mothers but respond to her stimulation with active movement toward her, with her and away from her. Such action by the infant often seemed to control the interrelation between mother and baby. Gerwitz (1962) found an effective interaction taking place between infant and mother (or constant caretaker) as early as 1½ months to 6 months of age. He interprets this as an important first step in the acquisition of social motivation and attachment. Loss of child-mother contact at this stage of development appears to be a critical experience which may result in extensive and sometimes irreparable damage to the physical and psychic structure of the child (McNeil, 1963).

SENSE DEVELOPMENT

It is fairly well agreed that, although the neural mechanisms involved in hearing, taste and smell are developed in the late fetal months, babies do not have full use of their sensory equipment at birth. In most sensory areas like temperature, taste and smell, however, fairly accurate discrimination is displayed within a few weeks of birth.

Part of the sensory inadequacy at birth is due to the fact that the baby has not yet learned how to control the muscles involved in vision and hearing. Part of it is the result of a lack of experience, which leaves the baby without comprehension of things he does see and hear, taste and feel. So inadequate are these sensory abilities that young mothers sometimes become panic-stricken, thinking their babies are blind or deaf when they fail to focus eyes intelligently or to give evidence that they see or hear some special stimulus.

The Senses of Touch and Pain. The sense of *touch* seems to function most nearly perfectly at birth, a slight touch on the cheek setting up the sucking reflex, or on the nose causing a closing of the eyes (Pratt, 1954). Bath temperature which varies much from lukewarm causes crying and struggling, and all writers agree that the temperature around a baby should not vary markedly or he will give evidence of discomfort.

The sense of touch, especially in the tongue and fingers, develops so that it becomes an important sensory "window" to the world. The year old child seems compelled to explore everything he can reach, not only with his fingers, but with his tongue and lips as well (Gerwitz, 1961). Its use to explore the qualities of objects is encouraged in preschools and kindergartens to help the child to become aware of hardness, softness, roughness, smoothness, warmth and cold (Casler, 1961).

The guidance of touch by vision develops rapidly from 4½ to 6 months, vision acquiring dominating significance in the development of arm and hand movements (Kislyakovskaya, 1962).

The phenomenon of *pain* sensitivity is somewhat different from that of other sense modalities. First, unlike vision, hearing or olfaction, there do not appear to be any localized areas in the brain that receive and integrate pain-producing stimuli. Second, the experience that adults call "pain" is highly dependent on learning (Mussen and Conger, 1962). It seems probable that there may be constitutional differences among infants in pain sensitivity, females being more sensitive than males (Lipsitt, 1959).

Infants do not respond to needle pricks or electric shocks in the first 4 or 5 days of life, but they learn to respond within 8 or 10 days.

Colic pains cause screaming by 6 or 8 weeks of age, and from then on children seem to suffer pain much as adults do. The progressive lessons in courage and self-control in the face of pain which our culture tries to teach begin in most instances around 2 or 3 years of age when parents try not to appear too concerned over minor injuries, and even try to encourage children to stop crying. By the age of 5 or 6 most children have already developed a substantial margin of self-control when in pain. In some primitive societies boys have already become stoics by the time they are 10 years old. Our training in peer group experiences disciplines boys not to cry when hurt, and even pokes fun at girls who cry too easily. The child who remains in an infantile stage of reaction to pain through indulgence and oversympathy from parents, or through missing peer group discipline in this regard, suffers a severe handicap in later life. Lessons in courage when in physical pain are fundamental to the later learnings about courage in the face of difficulty, defeat and other psychological pain. However, such lessons must not be overdone, since nothing shakes the emotional security of a child more than to be in genuine pain or danger and find himself without sympathy and support.

The Sense of Smell. Early writers

believed that the sense was well developed at birth. Lipsitt et al. (1963), however, found that the olfactory thresholds (intensity of stimulus needed to produce reaction) change sharply within the first few days of life, the infant becoming increasingly responsive to chemical stimuli administered nasally. During the first and second years the child begins to "pretend" to smell and comment upon his reactions. The type of research that would indicate whether or not the very young child smells such things remains still to be done (Reisen, 1960).

The Sense of Taste. Opinions about the development of the sense of taste in infants differ. Most experimenters report that sweet flavors are reacted to first. Salty, sour and bitter tastes are distinguished with more difficulty. Children will notice and react to changes in formula by 2 to 3 months (Breckenridge and Murphy, 1963). The fact that preschool children will take cod liver oil directly from the spoon and reach out to lick off the last drop makes some people wonder if the sense of taste is not defective even at that age. However, this latter instance is only one of many which indicate that children will accept a wide variety of tastes such as cod liver oil, turnips, liver and other strong tastes if these tastes are offered without prejudice. They will, however, refuse them if the adult makes his own distaste for such foods evident.

The Sense of Hearing. The neural mechanism for hearing appears to be well developed at birth, as we saw in Chapter 7, but amniotic fluid in the eustachian tubes keeps the baby deaf for a few hours after birth. Once the amniotic fluid is cleared, babies react to sharp, sudden, harsh sounds. Within 10 days reaction is elicited by the tick of a fairly loud watch or by the human voice. Bridges (1961) found that neonates (up to 5 days old) responded to a series of tones of different pitches and loudness. They responded to differences between 200 and 250 cycles per second (approximately one musical tone).

Illingworth (1962) gives the following schedule of auditory development in infants:

4 weeks: Quiet when bell sounds.
12 weeks: Turns head to sound (12 to 18 weeks).
28 weeks: Imitates sounds, protrusion of tongue, etc.

The child's development in reaction to music and to spoken words will be discussed in Chapter 11. What he learns to like or to dislike in the way of sounds seems to be a product of (1) his own sensitivity to sound, (2) a reflection of the tastes of the people about him. Some children have a lower threshold for sound (are more sensitive) than others. Occasional nursery school or primary children will hear the hum of an airplane engine several seconds before the average adult, or will call the attention of older children and adults to bird calls or other sounds not noticed by them. An occasional child has absolute pitch and can identify any given musical note correctly; some children have a far lower difference threshold of sound even than adults, and can, therefore, detect finer differences of tone or sound than the average adult. Apparently these differences are, in part, native and, in part, due to early training. Preferences in sound seem largely determined by training and pattern set by admired adults or peers. Much can be done, and is being done, in nursery schools and in elementary and secondary schools to train children to love good music (Fig. 60), to enjoy nature sounds, to appreciate fine speech, and in other ways to improve their reactions to sound.

The Sense of Sight. STEPS IN DEVELOPMENT. Infants in the first 5 days of life look more consistently at

FIGURE 60. Schools teach love of good music. (Courtesy of H. Armstrong Roberts.)

black and white patterns than at plain white surfaces (Frantz, 1963). They prefer complex visual stimuli over simple ones (Berlyne, 1958). Certain color discriminations are possible as early as the third or fourth month. Accurate perception of color depends upon learning and develops later.

Illingworth (1962) gives the following table of visual development in infants.

4 weeks: Watches mother intently when she speaks to him. Opens and closes mouth. Follows dangling object when brought to midline less than 90°.
6 weeks: When supine, follows many objects from side to the midline (90°).
8 weeks: Fixation of eyes. Convergence. Focusing.
12 weeks: When supine, watches movements of hands (until 24 weeks). Follows dangling object from side to side.
20 weeks: Smiles at mirror image.
24 weeks: No more hand regard.
28 weeks: Pats image of self in mirror.
40 weeks: Looks around corner for object in mirror.

DEVELOPMENT OF INTERSENSORY PERCEPTION

It has been known for some time that, in the emergence of the mammalian nervous system from lower forms, the essential evolutionary strategy has been the development of mechanisms for improved interaction among the separate sensory modalities (Sherrington, 1951). There is evidence to suggest that in man, even for relatively simple sensory functions, the effects produced by the application of a stimulus to a given sense organ are continuously modified by ongoing activity in other sense modalities (Fig. 61) (London, 1954).

Birch and Lefford (1963) explored equivalence relationships among visual, haptic, and kinesthetic sense modalities for geometric form recognition in normal children of school age. They use the term "haptic" to mean the complex input obtained by active *manual* exploration of an object.

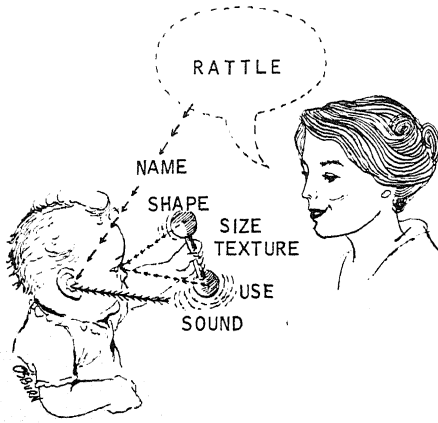



FIGURE 61. The infant discovers the components which come to mean the object.

Such exploration involves tactile, kinesthetic, and surface movement sensations from the subject's fingers and hand, such as that obtained in handling an object. The "kinesthetic input" refers to the sensory inputs obtained, for example, as in Figure 61, through passive arm movement—input from wrist, elbow and shoulder joints and from arm and shoulder musculature as the principal components. The results of Birch and Lefford's study showed a development of intersensory judgments of identical forms with age. The visual-haptic judgments of geometric forms improved with age up to age 8, showing no improvement after that.

Visual-kinesthetic judgment improved with age in the older children, and by age 11 the average error was very small. Visual-stereognostic judgment of amount of depth (depth perception) is inaccurate in children of 3, but improves fairly rapidly after that. That children react to depth in early infancy we shall see later in the Gibson experiments. Judging the extent or qualitative aspect of depth, as discussed here, is a different matter. There is rapid development of both visual-haptic and visual-kinesthetic capacities from the sixth through the eighth year of life. The establishment of such interrelations contributes to behavioral organization the possibility of increased control of action by visual perception. Since this is true, it is found profitable to introduce cursive writing in the educational curriculum at ages 6 to 8.

Perception of Size. After the first awareness of general objects and situations is fairly well established, there follows a breaking down of a general reaction into more specific parts. An infant will react to a tiny doll nursing bottle with the same expectancy that he uses to react to his own full-sized bottle. As yet size of objects has not been separated out from the other qualities like shape and general appearance. A year old baby may occasionally be seen to reach for the moon as eagerly as for the ball in his playpen. Distance has as yet no separate meaning to him. Mistakes of size, shape, weight, and the like, are still being made by children of 3 to 5 years, involving even common objects with which they are, in general, thoroughly familiar; but improvement is rapid.

What size means, viz., that a large object occupies more space than a small object and will not, therefore, fit into the smaller object, is a concept foreign to infants. Concepts of size depend upon a number of varying factors such as distance, the relation of one object to another, etc. (Cohen, 1958). One of the favorite toys of 18 month to 2½ year old children is a nest of four-sided, hollow cubes which fit into each other. To the 18 month old child they are only blocks to handle and throw or to stack by chance. But in time he finds that some of them slip inside the others. With help, a 2 year old child will learn to call the one which goes inside the other "little," and the one which goes outside "big." Eventually he will learn that the one which goes inside all of the others is

the "littlest" and the one which will not go inside any of the others is the "biggest" (Shedd, 1958). By 2½ years most children can look at the cubes and without trial and error pick the biggest, then the next biggest, and so on to the littlest, either placing them inside each other accurately or stacking them into an orderly graduated tower. From such toys or from the kitchen cupboard pans and covers they can learn that size is a property which all objects have, that it means the amount of space the object occupies. At the same time they are usually learning the conventional language names: "big," "little," "large," "small," etc.

Confusions of size persist in occasional instances for most children even into the fifth year. In play 3 year olds may be so carried away with the imaginative house play with doll furniture that they temporarily submerge the as yet imperfectly formed judgments of size. One can see them for a moment forgetting to realize the size of tiny doll furniture and attempting to sit on it themselves, only to look surprised, and often a little sheepish, because they failed to react accurately to this quality of the object. A 3 year old can be seen trying to ride his tricycle through an opening too narrow or too low for it. Probably because the child sees himself less than he sees other objects, he usually misjudges his own size later in his development than he does the size of other objects. Four year olds, for example, can be seen trying to sit in an adult chair as an adult does, back against the back and feet on the floor, and looking puzzled because they cannot fit themselves into this position. Although these misjudgments are not typical of daily play, such instances show us that perception of size is not automatic even at 4 years of age. The accuracy of equality judgments for size or similar-form figures is high at all age levels. The kindergartners, in one study of this capacity, were as accurate as the college students (Estes, 1961).

Perceptions of Shape. GENERAL FORMS. Judgments of shape must, like those of size, be learned (Gibson and Olum, 1960). We do not see shape instinctively any more than we do size, but rather we must learn how to react accurately to the factor of shape. An 18 month old child, given a form board (Fig. 62), almost at once catches the idea of placing the figures into the available holes, but he will try to fit the pieces indiscriminately, pushing the square into the round hole at random. He will select the smaller pieces for the smaller holes, and the larger pieces for the larger holes, but will confuse the shapes. By 3 years, however, a simple form board offers the right challenge (Fig. 63).

Children differentiate squares, circles and triangles first, diamonds, crosses and more complicated shapes later (Nelson et al., 1962). One test in the Binet Mental Test Scale (as revised by Terman) requires the child to copy a square at age 5 using pencil and accomplishing one correct drawing in three trials. Most children of less than 4 years of mental age scribble, or produce a cornerless drawing resembling an irregular circle (Fig. 64). Until after 4 years of mental age they fail to see the difference between their own drawing and the clearly marked square which serves as a copy.

Birch and Lefford (1963) found that the circle, which can be reproduced by very young children, is the figure exhibiting by far the highest level of equivalence in all intermodal combinations. In contrast, the diamond, a geometric form which is not accurately drawn by children before 6 to 7 years of age, is one which imposes a significant degree of difficulty in the course of developing accurate intermodal discrimination.

The child's ability to translate eye-

FIGURE 62. The 18 month old child cannot yet judge shape accurately. (Courtesy of The Merrill-Palmer Institute.)

hand coordination into kinesthetic performance does not reach accuracy until about age 5, when it can be used to express ideas to a degree, but reaches mature form only later. This is one of the factors underlying the discrepancy between perceptual recognition of shapes and gross inaccuracy in their reproduction which characterizes children's drawings (Birch and Lefford,

FIGURE 63. The 3 year old finds a simple form board an interesting challenge. (Courtesy of The Merrill-Palmer Institute.)

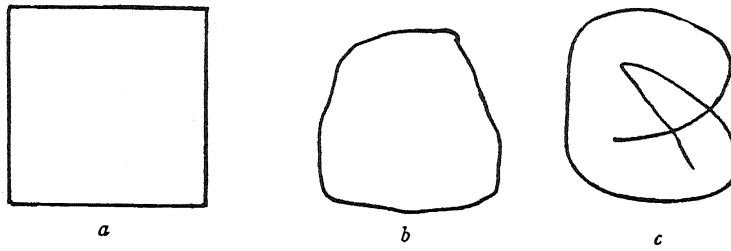



FIGURE 64. *a*. Square to be copied. *b* and *c*, Squares as drawn by children of mental age less than 4 years.

1963). See Figure 65, *A* to *E*, for examples of drawings by 5 year old children.

LETTER FORMS AND OTHER FINE SHAPES. Ability to discriminate between letter forms is fairly well in hand by 5 years, since some children of 5 can recognize many of the letters of the alphabet when printed in capital forms and can, before their sixth birthday, print in staggering sizes and alignments the letters of their own names. This facility should not be coached or pushed, however, into "reading" and "writing," since to do so would place undesirable strain upon all but the most exceptional children. Even 6 and 7 year olds have difficulty in making such fine discriminations of form as that between "p" and "q," "b" and "d," "3" and "E," and such similar word forms as "hat" and "hot." Great patience is necessary in helping children to take such an important step in the lowering of their difference thresholds of form discrimination as the above and, hence, to prepare them for reading and writing. Children who are conspicuously slow may be lacking in the general experience with a wide variety of objects which teaches hand and mind to analyze detail and to react discriminatingly to small or subtle differences in form. Children make rapid progress in the differentiation of small differences in size and shape throughout the elementary school years, ages 6 to 12. Even 3 year old children enjoy a simple two-piece jig-saw puzzle. Six year olds love such puzzles cut into 10 to 12 fairly large pieces. Children of 9 to 12 years rate puzzles among their dominant interests, and the jig-saw puzzle of increasing complexity continues to hold interest as a challenge to accurate form discrimination throughout adulthood if the puzzle is complicated enough.

Development of Accurate Perceptions of Qualities of Objects. Children a generation or so ago had many natural opportunities to explore and to manipulate objects and thus to develop accurate perceptions of size and shape which the city-apartment child lacks today. The highly mechanized home offers far fewer *opportunities* for touch and manipulation than did the less automated living of the past. We have been compelled to find substitutes. "Educational" toys have been created to give experiences in differing sizes, shapes, colors, textures, weights and other dimensions. Nursery schools and kindergartens stress sensory and perceptual training, not only as preliminaries to reading, writing and drawing, but also as bases for creative activity in art, shopwork, and so on.

Confusions in Direction in Reading and Writing. Children improve in accuracy of discrimination of letter-like forms from 4 to 8 years (Gibson et al., 1962). Some children suffer a longer period of confusion in reading and writing direction than do average children. They confuse "saw" and "was,"

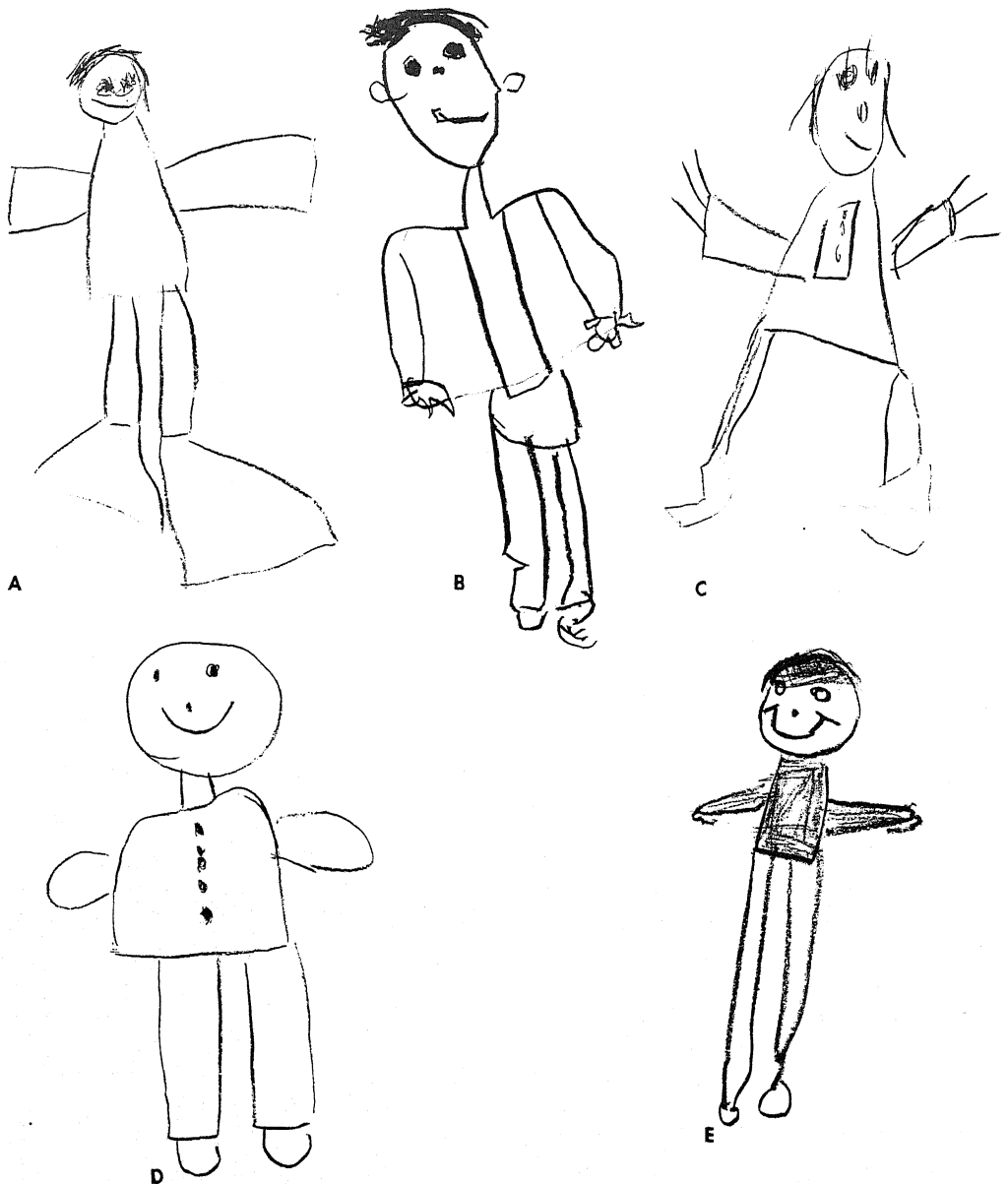



Figure 65. *A, B, C, D, E,* Drawings of a man by children ages 4 years 9 months to 5 years 4 months of age. (Courtesy of Educational Department, First Methodist Church, Nursery and Prekindergarten Division, Santa Monica, California, 1964.)

for example, or they "mirror" letters or words in writing longer than most children do. Some confusion in direction is natural, since it is merely convention which requires us to move from the left to right side of a page instead of, say, from top to bottom as the Chinese do. Prolonged confusion, however, is likely to mean confusion about general direction, and this is

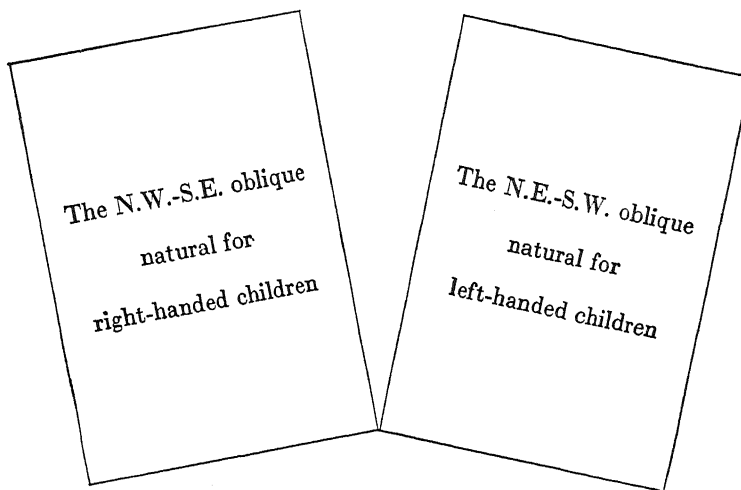



FIGURE 66. Positions of paper for right-handed and for left-handed children.

often related to handedness. Naturally left-handed children find movement from right to left easier than the conventional direction, since movement from the inside to the outside seems more natural for either hand. Right-handed people swing naturally from left to right in reading and writing. Left-handed people or those who have a tendency to left-handedness seem to "feel" naturally a right to left direction. Such children require much more practice in the fixing of direction of eye movements in reading and of hand movements in writing than do right-handed children. It is important in the early attempts to read and write not to let practice in the wrong direction occur. Teachers should watch children who lean toward left-handedness to make sure that they practice correct direction from the beginning. They should also watch to see that the left-handed child places his paper for writing on the northeast-southwest oblique (Fig. 66) so that the left hand can proceed naturally across the page with the hand held below the writing. If the left-handed child places his paper on the northwest-southeast oblique, as do right-handed people, there is nothing left for him to do but write "upside down," the hand placed above the writing and the wrist twisted. Left-handed children can, and should, learn to write as legibly and as rapidly as right-handed children, but they can do so only with proper help. They can also learn to read as well, but only with proper help in establishing direction of eye movements.

Observations of form and the ability to reproduce what is observed in a drawing develops in such orderly manner that at least one shortcut to the measurement of mental age has been based upon it. The Goodenough scale for judging mental age from the drawing of a man is based upon the observation that children draw one or two of the most familiar things in their environment (man, house, etc.) in characteristic form at given stages in the development of form discrimination. Drawings characteristic of children ages 4 years 9 months to 5 years 4 months (Fig. 65) and first grade (Fig. 67) show definitely characteristic developments in form discrimination, ability to produce perspective, and utilization of detail. Children improve in perspective, ground, sky, shadows,

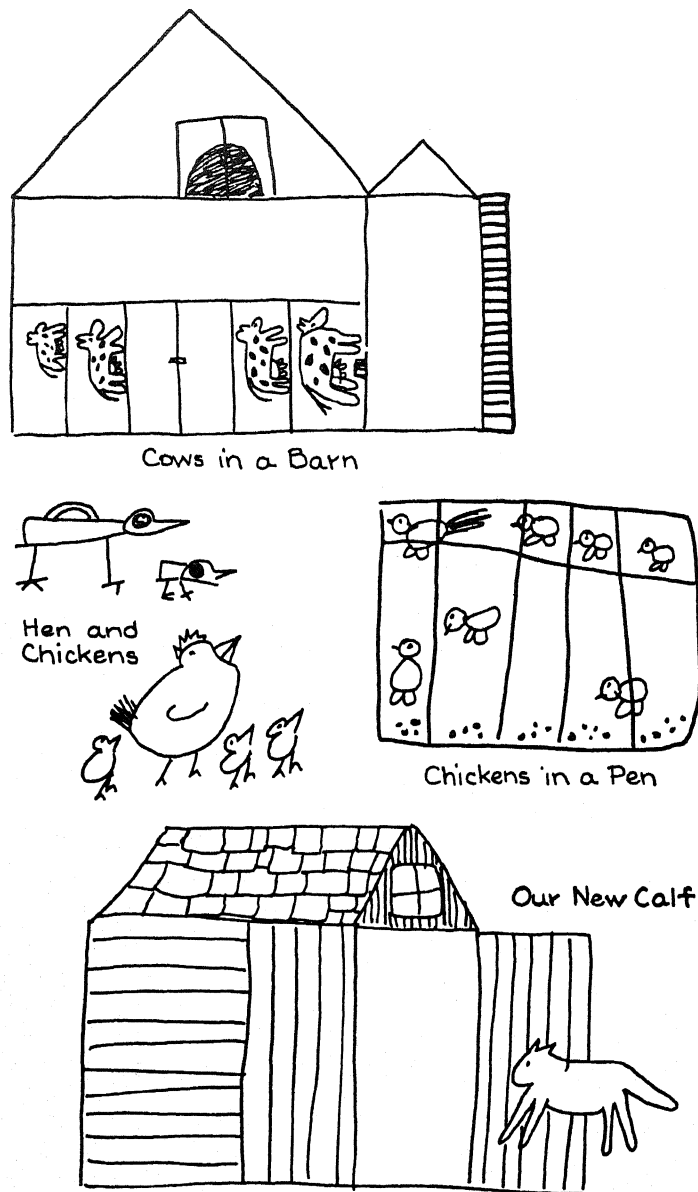



FIGURE 67. Typical first grade figures selected from children's booklets and movie strips. (Hughes and Stockdale: Childhood Education, March, 1940.)

etc., from 6 through 15 years of age (Ghesquiere-Diericka, 1961).

Perception of Color. Reaction to color is another of the learnings in the development of sense perceptions, since color is another of the fundamental qualities of objects. Color vision is possible only when the cones in the retina of the eye develop sufficiently. This occurs early in the third or fourth month of life, and we can observe the infant consistently pre-

ferring a rattle or toy of a certain color. However, the child does not recognize color as a relatively independent quality of objects until later (Church, 1961). Whether preschool children prefer red or blue or yellow seems undecided, since available studies differ in their findings. Hunt (1959) found that primary colors are preferred over others at all ages from 3 through 10 and that color preferences do not vary with sex. At least one study indicates that color preference is related to the feelings of the individual child. Studies differ as to the color named most frequently and with most accuracy by preschool children. Most of the fundamental and familiar colors are properly named by kindergarten age, or can be learned easily at that time. Boys have a greater tendency to confuse colors than girls, partly because 8 to 10 per cent of males are red-green color blind, whereas only 2 per cent of females are so afflicted, and partly because our present social tradition expects boys to pay less attention to colors than girls do. There are wide individual differences in sensitivity to colors, some children seeming to be captivated by colors early in the preschool years, others remaining comparatively indifferent to them.

Perceptions of Textures. Judgments of texture also develop largely during the preschool period although, in this as in all sensory reactions, perfection and discrimination can be refined throughout life. Children of 1 through 3 years are notorious "handlers." They wish to touch and to explore everything about them, the hunger to perfect manual skills and the eagerness to learn all the properties of objects leading them to examine everything with which they can get into contact. One of the properties they are thus investigating is texture. Hard, soft, rough, smooth, slick, or furry—all "feels" are welcome to the fingers and to the mind to which all these awarenesses are new and fascinating. Most children of 2 to 5 years would not only enjoy but would learn much from a scrap bag of textiles, empty spools and other odds and ends. Modeling clay or pie dough helps children of primary and early elementary age to satisfy the continued urge to handle and manipulate textures. Children of all ages along with adults enjoy finger painting, in which one "messes" on paper with the whole hand, thus producing pictures with free flow and often beautiful rhythm. This satisfies not only the urge to feel textures, but also the urge to produce something creative.

Perception of Volume. According to Piaget (1952), children do not have a well-developed concept of physical volume until 11 or 12 years of age. They do not have abstract responses to mass until 7 or 8 years of age, or of weight until ages 9 to 10. Elkind (1962) confirmed these findings for mass and weight, but not for volume, which he found conceived abstractly by only 27 per cent of the 11 to 12 year olds he studied.

Perception of Weight. Judgments of weight are inaccurate for several years because accurate judgment of weight depends upon accurate judgment of size and a wide variety of experience with materials. Weight, in other words, is dependent upon the size of the object and upon the weight of the material of which the object is made. As adults we have forgotten the painful experiences by which we learned to judge the weight of objects and by which we learned to make the necessary muscular adjustment before picking things up. One reason why children drop things so often is not only that their hands are still clumsy but that they frequently fail to make the appropriate muscular adjustment necessary in order to hold on to things. As a general rule, small things are light and big ones heavy. Preschool and primary-age children,

therefore, make little muscular preparation when picking up small objects and much adjustment when picking up large objects. However, a small object which is made of a heavy metal or other heavy material requires the muscular adjustment necessary to lift a heavy object. The child, having failed to appreciate this, drops such objects until he learns which materials (how they look and feel) are the heavy ones per unit of size. Similarly, one sees young children making elaborate muscular adjustments preliminary to picking up a large balloon-like beach ball, only to throw themselves over backward as the ball fails to use up the muscular pull. Thus, they learn that some big objects are light and require little muscular pull, and gradually they learn which materials are light as well as which ones are heavy.

Weight judgments depend, then, upon knowledge of the factors which usually make up the weight of objects, namely, size and density of material. They also come, in time, to mean the kinesthetic "feel" which goes with the handling of objects. The exact amount of muscular tension and the exact feel in the joints of the body come to be part of the perception (or meaning) of weight. So orderly is the development of this perception in the experience of average children that judgment of weight discrimination has been used as a test of intelligence. These tests of weight discrimination are spread over several years of mental age and serve to indicate that judgments of weight are improving in fineness of discrimination throughout childhood. This is also true of all other perceptions and judgments, viz., that the first obvious conquests of knowledge occur in the preschool years but that an increasing skill in judgment, as evidenced by constantly lowering difference thresholds or fineness of discrimination, occurs throughout childhood.

Perceptions of Distance. Judgments of distance are even more complex than judgments of weight. The farther away an object is the smaller it looks, the less definite its outlines, the less saturated its color, and the slower its movement. Preschool and primary school-age children, looking down at traffic from a tall building, are enchanted with the toy world which lies below. Until told, they sometimes fail to realize that below them lies a world of full-size automobiles and streetcars and people which look diminutive only because they are far away. Through such experiences as this, and through watching cars approach or retreat, they come to learn that the smaller a standard-sized object looks, the farther away it is. Through experience they learn the other qualities of the objects by which one can judge their distance away.

By 12 or 13 years of age the child has achieved fairly accurate judgments of weight, the force needed to propel that weight a given distance, the angle of application of the force needed to achieve a given direction, and other such concepts. Applications of this knowledge and perceptual ability to play situations and the learning involved in such application are invaluable. Figure 68 shows the concentration and satisfaction involved in such play experiences.

Concepts of "far-away distances," and the ability to make accurate comparisons as to the remoteness of places, have been found by Wann (1962) to occur earlier than was supposed possible in the 1920's and 1930's. Many children of 3 to 5 years were found by Wann to be able to make accurate comparisons as to the places they talked about. For example, some young children in New York City knew that California was substantially farther away than New Jersey, and in playing train not only called their names in proper sequence but with proper time inter-

FIGURE 68. Play teaches and tests accuracy of perceptions and judgments. (Courtesy of H. Armstrong Roberts.)

vals. Not all children of these ages are this clear in their concepts of comparative distances. Wann adds that development of such concepts does not come through a smoothly developing set of steps but occurs rather as a "joggling shuttle" in which children work back and forth between complex ideas of space and distance and less complex ideas that relate to their immediate living space.

These concepts are tested in everyday life, sometimes in situations where accuracy in judgment is vital to life. In traffic, for example, the pedestrian or the driver must judge distances accurately. One soon learns to vary the different judgments according to circumstances. On foggy days cars which are quite close are blurred in outline and, therefore, seem farther away than they are. This, added to the fact that the driver sees less well than usual, multiplies automobile and pedestrian accidents. Persons who have learned distance judgment in the high clear air of the mountains are in serious danger of traffic misjudgments in the denser and often more smudgy atmosphere of a low altitude industrial city.

As in the judgment of weights, adults have usually forgotten that judgment of distance is not instinctive but is learned. Some radical change of conditions like the above is usually necessary to recall to mind the complexity of learnings upon which judgment of distance is based. It is small wonder, then, that young children so often misjudge distances badly. One sees them pushing a tray too close to the edge of a table with consequent breakage, jumping from heights too great and getting hurt. It takes a good deal of understanding on the part of the adult not to laugh in amusement, or to be irritated or puzzled at this type of misjudgment.

Perception of Space. Piaget (1952) found that children in the early child-

hood period showed development in spatial concepts with age and that the steps of growth in this area were fairly definite. Dodwell (1963) found that over-all ability to deal with spatial concepts develops with age during this developmental period but that there were no clear-cut progressions from one type of thinking about space to another.

Perception of Depth. Characteristic also of inability to judge distance is inability to judge depth accurately. Recall from Chapter 7 that children are slow to develop binocular vision or single vision with depth perception. Two year old children, in the learning process, will lift a leg elaborately to step over the edge of a carpet or linoleum; or they will run a finger wonderingly over a figured material commenting, "It looks rough; it feels smooth." They have not yet learned when a change of line means a change of surface, since in some instances it does and in some it does not. The edge of a step, for example, means both a change of line and a change of surface; a pattern on dress material means a change of line without a change of surface. The change of line at the edge of a rug or linoleum means enough change of surface to trip you up, but not enough to require a lift of leg equal to ascending a step. Only with time and experience can children learn that change of depth or surface can be judged by the depth of shadow, by the difference in color intensity, or the angle and play of intermediate lines and surfaces.

Eleanor Gibson (1963), in a series of ingenious studies (the Visual Cliff studies) in which newly born animals and, later, a group of young human infants crept across a large glass surface constructed to give the appearance of a drop-off along one area, found that perception of depth at the edge is primitive, both phylogenetically and ontogenetically. Some animals are fully mature in reacting to this apparent drop-off at birth. Animals which have a longer maturation time after birth (e.g., cats, human infants) discriminate depth at edge as soon as locomotion is possible. Development of this discrimination, therefore, is not dependent upon stepping down, climbing up, or walking into things. It matures without benefit of reward or punishment or associative learning. However, Watkins (1963), in discussing Gibson's work, emphasizes the fact that experience may play more of a role in perception than is currently believed.

Gibson found also that objects which possess depth at their edges are discriminated earlier than two-dimensional pictures or line drawings.

Epstein (1964) comments on the fact that Gibson's work did not include human newborns. After a review of of other studies in this area, Epstein concluded that no simple decision about the genesis of space perception is possible at the present stage of our knowledge.

Perception of Time. Judgments of time, like those of distance, never become really accurate. We are, at any age, limited by our experience with time. Yesterday, a year ago, 5, 10 or 50 years has meaning to the adult who has lived that long. One hundred years sets us to computing historical dates, as does 1000 years. But a light year in distance, or a million years in geological time are vague concepts indeed. So it is with children. What they have experienced repeatedly becomes meaningful; what they have not yet lived through is meaningless. A new child in the nursery school cannot understand that Mother will come "this afternoon" because "this afternoon" has no meaning for him. He can understand, however, that "we will have our orange juice, then we'll play a long time (when waiting for Mother it will seem long to him),

then we'll have a story, then lunch, then we'll have our nap. Then it will be afternoon and after we've played some more Mother will come."

Even for the 3 and 4 year old, afternoon is "after lunch." However, more clear-cut events, separated by more dramatic incidents like going to bed and the change from light to dark and back again, stand out. "Yesterday," "today," "tomorrow," are clear to most 4 year old children. Ames (1946), in a systematic compilation of verbal expressions of time used by young children, found words indicating the present first used at 24 months, the future at 30 months, and the past at 36 months. General divisions of the day (morning, afternoon, evening) were not used correctly until 4 years; days of the week at 5 years; months at 8 years. Her children were not able to tell time until 7 years of age. Four year olds can grasp accurately the meaning of "day before yesterday," "day after tomorrow," "last week," even "next week." Dramatic events like "last Christmas," or Easter, or birthdays stand out and are appreciated as events. However, how long it will be until Christmas is nebulous to most 4 year olds unless the time is within a few weeks and the stores give evidence of preparedness. "Summer when we go to the lake," or "Winter when we wear galoshes," or "Spring when the leaves come out" are becoming clear in the late preschool period. McAulay (1961) found that second-graders (ages 7 and 8) have difficulty associating the past and the present within the immediate environment; they seem capable of understanding periods of time; they have some understanding of past social reality; they tend to have little understanding of the continuity of time.

For the 9, 10, and 11 year old child, time falls into sequences of years through which they have lived and into some judgments of historical time. Reynolds (1951) tells of a group of 8 year olds who were not sure whether George Washington was mentioned in the Bible, whereas a group of 9 year olds had acquired a sufficient working perspective on history to enable them to answer where George Washington belonged. In a nationwide study of the Girl Scout program it was found that the 7 year olds tended to judge what they felt about the program solely in terms of the current year; 10 year olds did so in terms of the past year, the current year and the year to come. Only at 15 and 16 years of age could they judge in terms of 6 to 8 years past and 3 to 4 years to come. It is not unusual to find college freshmen to whom the first World War seems as remote as the Civil War and high school students to whom the depression of the early 1930's is no more real than that of the late 1890's.

A RELATIVE CONCEPT. Confusions in shorter time units still remain, however, in such concepts as "an hour or two," or "we have just ten minutes to get dressed." Some 5 year olds begin to recognize such units of time as are coincident with the hour or half hour placement of the big hand on the clock. "It is five o'clock" or "It is half past ten" presupposes not only an association between clocks and time of day but, to some extent, an ability to read numbers. Most children of 4 and 5, however, who tell time at all do so by more or less accurate guesses made from the position of the hands rather than from reading figures.

Even 6 or 7 year olds have difficulty with "You may play for twenty minutes." Part of this trouble comes from a general human confusion about time. Filled and happy time flies; unfilled and unhappy time drags. Fifteen minutes of play flashes by; fifteen minutes of sitting to think over a misdemeanor seems to last for hours. This is as true of adults as of children.

Many so-called behavior problems

result from this relativity. The family sits at dinner with engaging guests; time flies for the adults. The young children, with the conversation over their heads, eat, become bored, and are forced to lighten the boredom by becoming nuisances. Mother calls for dinner; the 8 year old says, "Just a minute." One more game leads to another, and in fifteen minutes he returns home gaily with the firm conviction that he has been "only a minute." To his mother, whose dinner is waiting and whose husband is fussing over the boy's disobedience, these same fifteen minutes seem thirty and she is thoroughly angry. At moments like this, genuine misunderstanding can result. Both boy and mother need to temper their sense of injustice in terms of an understanding of the other's viewpoint, and the boy needs to realize that unless he comes at once when called he is likely to lose track of time with unhappy results all around.

DAWDLING. Dawdling is one of the most acute problems of 4 to 8 year olds. Dawdling is found even in 2 year old children and probably represents a normal indifference to social requirements. The 2 year old child dawdles when motivation is low, or at mealtimes when tedious demands are made upon his motor coordination. Dawdling is a form of deliberateness which may have a developmental function in giving the child time to "catch up with himself" in the development of the skills required. By 5 years of age the child tends to dawdle less in combing and washing and eating, largely because of the added motor skill which a 5 year old possesses as an advantage over the 2 or 3 year old.

Part of the difficulty with 4 to 8 year olds lies in the fact that at this age adults are tending to throw more and more of the responsibility for dressing, eating, bathing, and care of personal belongings upon the child. This is as it should be, since development of independence and responsibility are of paramount importance. However, the adults should realize than when the child takes over such duties he will not execute them so neatly nor so fast as would the adult. His fingers are more awkward, for one thing. And for another, he lacks a sense of the passing of time.

Consider that the newness of dressing oneself has worn off and it is, therefore, no longer fun. Time drags in the unpleasantness of the task. Things can be lightened up a bit if one plays with one's blocks, or looks out the window, or splashes in the water in the bathroom. If the child has a good appetite for breakfast he may hurry in order to get at the next pleasure. If he has slight appetite, then eating becomes only one more chore, so why hurry? Entrance to school helps many children cut short the morning dawdling because most children like school and do not wish to be late. However, even here, the motive is removed if Mother always gives in and finishes dressing the child so that he gets to school on time anyway. Much of the problem here consists of helping the child to realize that even unpleasant chores can be dealt with best by direct and efficient attack which keeps them from using up too much time. In other words, time dragged out with dawdling is gone and cannot be used for other things. Dressing in competition with an hourglass helps to impress this sense of the passing of time as the sand trickles down. The movement of the hands of a clock also helps, especially if a second hand shows how relentlessly time moves on. Something pleasant happening at the end of the chore tends to lure one through the unpleasant parts, especially if waste of time on the chore obviously cuts down time for the pleasure.

LEARNING USE OF TIME. Experiences which give a true appreciation of time are invaluable training. Many

DEVELOPMENT OF FUNDAMENTAL ARITHMETICAL CONCEPTS. An important part of the work of the early elementary school, as we have seen, is to give children the "fundamentals" of arithmetic. The techniques of addition, subtraction, multiplication and division occupy much time. It is very difficult to teach such processes as "add," "subtract or take away," "multiply or two times," "divide or put into two parts" to children who have not already grasped the idea through handling objects.

In order to be successful in arithmetic in school, children must have not only number concepts, but also facility with number combinations, and a knowledge of arithmetic vocabulary (*percentage, acre, rectangle,* etc.). Even with this equipment, however, there are a great many difficulties with arithmetic. One of the main reasons for mastering arithmetic in school is so that the child in later life may manage his own money adequately, may be able to make accurate measurements, to understand business practices, taxes and geometric design. It is important to see that children in school are presented with problems in arithmetic as closely related as possible to real life situations.

From understanding of the meaning of numbers the child moves through the understanding of such concepts as the four fundamental processes of addition, subtraction, multiplication and division, through percentage and reasoning problems in arithmetic and on, in the later junior high school and in senior high school, to the stage of development at which algebraic concepts are comprehensible and the handling of other abstractions is possible. Ultimately, the extreme abstractions of calculus can be mastered.

Person Perception. OF ONE'S OWN SELF. A number of studies have focused on the nature of the child's experience of himself. One approach has been to study children's conceptions of their bodies. Another approach has been to study the child's growing awareness of needs, feelings and attributes which he recognizes as his own, and their identification as distinct from those of others. This sense of separate identity implies an experience of the self as segregated and structured. This analytical aspect of perceiving, and this articulateness of body concept, appears to be relatively stable over the seven years of study to date (Watkins, 1963).

OF OTHERS. Yarrow and Campbell (1963) studied children's perceptions of one another in a children's summer camp. There were 267 boys and girls, ages 8 to 13, who were studied for two weeks of camp living together—8 children to a cabin. Active and friendly children gave more complex descriptions of others than did withdrawn or hostile children. The best-liked child appeared to be the least aggressive; the least-liked was the most aggressive.

Utilization of Child's Sense Perceptions. All sensitiveness to size, shape, color, and the other properties of objects can be developed by good teaching into a source of genuine intellectual curiosity and into a widened aesthetic awareness which will be of value throughout life. Much of this teaching consists of providing the experiences which will lower thresholds of difference and should be such as to result in emotional satisfactions in such activity. Babies of a few months appreciate toys that are colored, while children of 2 to 3 years enjoy clothes that are "pretty," or a room that is colorful. Picture books that are attractive can, from 12 to 15 months of age, create an interest in books which serves as an excellent background for learning to read upon school entrance, and for the joy of reading throughout life. Paints and a place to daub with them should be available not only to preschool children but to children throughout childhood and adoles-

cence. Teachers can do much to heighten the child's sensitivity to color and to teach him wise and creative use of color in his everyday life.

Improvement of Perceptions through Training. Children's horizons can be widened by calling their attention to things they have not already observed. A trip through the woods with a person interested in botany calls attention to numberless flowers and plants hitherto unnoticed. A trip through an art museum with a person interested in art focuses attention on numerous aspects of art not previously appreciated. A student of astronomy sees the stars in constellation groupings which escape the attention of another person. Study in any area sharpens one's ability to see, hear, feel and understand that area. Parent and teacher have an obligation to widen children's areas of perception and awareness.

Teaching can also improve the accuracy of perceptions. Careless observation results in inaccurate reports of situations. Keen and accurate observation of things or of situations around one, and the ability to make a reliable report of things observed mark the difference between intelligent reaction to the world and continued mediocrity of reaction. Biases and prejudices govern the thinking and reaction of the mediocre observer. Keen and discriminating reaction to the world is based upon the ability to observe accurately. Children can be taught early in life to observe accurately and to report reliably the world of things around them, at first the simple and obvious things but, as growth proceeds, more complicated and subtle things and situations. For children who possess a high degree of native intelligence, such training in observation can become the basis upon which truly scientific observation and the ability to advance human knowledge develops.

The success of any child in mastering the subject matter of the school is dependent upon many factors, both within and outside of the school and within the child himself. Among the most important factors within the child is the factor of intelligence. We have attempted to describe in this section how the child's intelligence is built in the area of his sensations and his perceptions. He can discover many things in his own body and he can develop a genuinely important sector of his intellect through learning control over his body. Whatever else he learns, however, must come to him through the avenues of his eyes, his ears, his touch and other sense organs. The handicap of the loss of any sense to the development of intelligence can be seen in the child born blind or deaf.

Intelligence, as we ordinarily find it, is built largely through the use of eyes, ears, touch, taste and smell. The infant must learn to control his sense organs well enough to make them useful, as we have seen in the description of how he learns to use his eyes. He must then have a gradually expanding but constantly challenging opportunity for experience from which he can feed his mind. Given these experiences through which he can see, hear, touch, taste and smell a variety of objects and situations, and given ample opportunity to use his own body, he will usually proceed satisfactorily in the growth of his intellect. How much he ordinarily learns before he comes to school and what the nature of these learnings is should be understood both by parent and teacher. Only through such understanding can the teacher fit the child's school experience smoothly into the flow of his growth. Only so can she help the slow learner or grower through the experiences he should have had before he entered school. The child's most important learnings in perception of size, shape, texture, distance, and even of time, occur before he enters the realm of formal education at all. Important

beginnings in understanding of numbers have also taken place in the preschool years. Children learn much which is typically intellectual quite outside the classroom.

An important emphasis in all studies of perception, as it is of all studies in motor control, is the fact of great individual differences among the children of any given age or school grade. Few investigators into any phase of child development fail to make special comment upon the striking nature of these differences, and to plead for a reduction of mass education which loads teachers with so many children that they cannot hope to adapt the curriculum to individuals. They plead also for the initiative and ingenuity on the part of the teacher which will "take each child *where he is* and lead him where he needs to go," regardless of the size of the class. Other aspects of thinking and reasoning are discussed in Chapter 11, where the use of language in these developments is shown.

EXPERIENCES TO VITALIZE CLASSWORK

1. What would you do to find out if a child who is slow to learn to read:
   a. Has defective eyesight?
   b. Is immature in form discrimination?
   c. Is too bashful to read before others?

   What would you do to correct each of these?
2. Visit some well-run nursery school. What provision did you see for conscious training of sense perceptions? Would you be able to suggest further experiences for the training of perceptions?
3. How should kindergarten materials and experiences for the training of sense perceptions and judgments differ from those of the nursery school? From those of the upper grades?
4. How would you find out if a child who is slow to get started in arithmetic is lacking in basic number concepts? What experiences could you plan for him to remedy this defect? How would you decide whether defective ability to solve problems in arithmetic in the fourth to the eighth grade was the result of:
   a. Defective number concepts?
   b. Defective arithmetic vocabulary?
   c. Defective reading ability?
5. Have various members of the class select readings from the list below for report to the class. Discuss these.
6. Look up further material on handicapped as well as gifted children, especially in the literature since 1960. What provisions are now being made for the training of such children? Do these provisions seem reasonably adequate in your state?

SELECTED READINGS

Crow, L. D., and Crow, A.: Readings in Human Learning. New York, David McKay, Inc., 1963. Skinner, B. F.: The Science of Learning and the Art of Teaching, pp. 28-39; Murphy, G., and Hochberg, J.: Perceptual Development: Some Tentative Hypotheses, pp. 207-208; Gifford, J. P.: Three Faces of Intellect, pp. 270-287; Palmer, R. R.: Straight and Crooked Thinking, pp. 394-399.

Cruickshank, W. M. (ed.): Psychology of Exceptional Children and Youth. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963. All chapters are relevant.

Hunt, J. McV.: Intelligence and Experience. New York, The Ronald Press Co., 1961. Piaget's Observations: From Sensorimotor Schemata to Formal Operations, pp. 170-247.

Kiell, N.: The Universal Experience of Adolescence. New York, International Universities Press, 1964. Chapter IX, The Adolescent Intellect.

Murphy, L. B.: The Widening World of Childhood. New York, Basic Books, Inc., 1962. Chapters 2, 3 and 4 (excellent case studies).

Sumption, M. R., and Luecking, E. M.: Education of the Gifted. New York, The Ronald Press Co., 1960.

Wann, K. D., et al.: Fostering Intellectual Development in Young Children. New York, Teachers College, Columbia University Press, 1962.

MEMORY

Current Hypotheses. There are currently two hypotheses concerning the biochemical basis of memory (Landauer, 1964). The first is that the basic event of conditioning or learning is transfer of RNA (ribonucleic acid) molecules from surrounding glial cells into the conduction neurons and subsequent transformation of the protein synthesizing apparatus of the neuron. It may perhaps be oversimplifying this if we say that, by this theory, memory of the S-R kind can occur at the neuron level, much as we saw in the perception-motion discussion in Chapter 9.

The other hypothesis is that information is coded for storage in the central nervous system (CNS) in the form of frequency characteristics of ac potentials to which a neural membrane can become tuned by alternation of its protein structure. Together, these two hypotheses suggest a physiological theory of memory or learning.

Stuart and Prugh (1962) compare the memory mechanism to what Wiener et al. refer to as "cybernetics," using electronic calculating machines as the analogy to the new dynamic concept of the nervous system. The essential fact in this idea is that a neuron circuit can be set in action by an incoming single impulse and that the circuit may go on reverberating as long as metabolism supports it, or until other impulses change it.

Berelson and Steiner (1964) discuss rote memorizing as an aid to bridge the gap between habit formation and thinking. They say that in its simplest form rote memorizing is simply the formation of chains of stimulus-response associations. They say that when the content of material to be learned has no meaning for the subject, that is all that happens.

Just when does memory develop in children? This is not an easy question to answer. In a certain way we must consider sheer conditioned responses in the class of memory, since the response is determined by previous experience which leaves its trace in the nervous system. Very young infants show this sort of memory. Even after a few weeks of life and experience a crying infant will become quiet when his mother approaches his crib even though she has not yet made him comfortable. He "remembers" that her presence eventually means relief from distress. Other evidences of such conditoned memory are to be found in the child who, at a year or 15 months, snatches the tablecloth and pulls it toward him only to have dishes and liquids tumble over him. This usually frightens him enough so that he leaves tablecloths alone for some time thereafter.

"Training" the Baby. A deliberate attempt to make the infant remember on the conditioned response basis is recommended in occasional child training books as a basis for disciplinary control. These books recommend "training" lessons, in which the infant is handed some object, but as he reaches for it the hand is pulled back or slapped with a firm "No." Thus, the child is "taught" to withdraw his hand at the word "No." Such procedures are considered poor practice by nearly all contemporary child psychologists. The child should not, for example, be tempted to reach, then punished for doing so, since such procedure can only produce confusion in the child's mind. In teaching a child to remember he should be offered as little confusion as possible; the lesson should be simple and clear. Plenty of opportunities to teach the meaning of the word "No" will present themselves if the adult will wait for the normal course of the child's activities to produce them. In such a case, the adult's "No" represents only forbidden activity and is not confused by an adult command to reach for an object, which is immediately followed by a counter command not to reach for that same object. Some psychologists of sound standing, however, approve the use of slaps on the hand or the building of a conditioned association of "No" with a gentle though firm withdrawal of the child's hand from a forbidden object or even a parental explosion if circumstances warrant.

Although nearly all psychologists are agreed that children, even in the first year of life, should begin to learn the meaning of adult-imposed restriction on their behavior, almost all current psychologists and psychiatrists frown upon *severe* physical punishment at any age.

In an attempt to discover a period in infant development when procedures used in inoculations would not be followed by memories which would hold over into subsequent injections, Levy (1960) concluded that inoculations given at 6-week intervals and completed by 6 months of age are least likely to be remembered. It must be recalled here that this is "memory" operating on a conscious level and does not imply "memory" as the psychoanalysts refer to the traces of experiences that sometimes endure in the subconscious to influence later feelings and behavior.

Memory which is less closely associated with physical comfort or "conditioned" reaction is reported in a classic study by Bühler (1935), who

found that 5 month old infants could remember for a few seconds a smiling face or a game played. Bühler found that children of 15 to 17 months could remember for eight minutes; children of 21 to 24 months could remember for seventeen minutes. The work of other investigators checks with these data in general; they found in similar experiments that children of 19 to 20 months remember over a period of fifteen minutes, whereas children of 10 to 11 months remember only one minute. It must be understood, of course, that these time intervals refer to specific experimental conditions only. They serve, however, to tell us that babies' memories are very short. Since this true, it is easy to distract a small baby's attention from undesirable activities or from something he wants but cannot have. Many parents discover this when their children are infants but fail to appreciate how rapidly memory develops and tend to continue the program of distraction long after it should have been abandoned.

Development of Memory. The speed with which children of 18 months begin to acquire vocabulary (see Chapter 11) is testimony to the speed with which memory of the more abstract kind is developing. With the acquisition of words and the ability to use them we find an additional way of testing the memory of children. Memory is of two kinds: immediate memory and retentive memory. There are many evidences of the child's capacity for immediate memory as measured by reproduction of words or numbers repeated immediately after the examiner or as evidenced by the duplication of actions like tapping cubes or marking squares in patterns set by the examiner. Children of 18 months can repeat single words after an examiner, children of 24 months can repeat five single-syllable words like "Give me the big box." Children of 2 years are able to repeat a sentence of three to four syllables; children of 2½ years, six to seven syllables; children of 4 years, twelve to thirteen syllables (one trial of three); of 6½ years, sixteen to eighteen syllables. At 11 years children can repeat a sentence of twenty syllables almost without error. These standards are incorporated in verbal intelligence tests used at the various levels. The Terman-Merrill Revision of the Simon-Binet Tests of Intelligence gives a normal immediate memory span for two digits at 2½ years, of three at 3 years, of four at 4½ years, of five at 7 years and of six at 10 years.

A number of studies on the earliest memories of older children and adults have been made, showing that occasional correct memories dating from 1½ to 2 years have been reported by adolescent children. The average age of first memory for adolescent children seems, however, to be around 3½ to 4 years (Epstein, 1963). Unpleasant memories predominate, probably because they are more vivid. Learnings accompanied by pleasant feelings are remembered longer than learnings accompanied by unpleasant feelings. Vivid memories, however, remain longer, whether pleasant or unpleasant, than other memories.

These, we must recall, are conscious memories, those which are available to the conscious mind for recall. Clinical psychology gives us many evidences of the deep-lying effect upon behavior of early childhood memories or even of infant experiences which have become buried in the unconscious mind.

Use of Rote Memory in Teaching. Ability to memorize digits or other "nonsense" material develops rapidly between 2 and 10 years and at 10 is nearly as good as it will be in adulthood. Ability to repeat by rote memory is, in fact, so well developed by school entrance that some systems of educa-

tion yield to the temptation to exact large quantities of repetition of rote materials, laboring, apparently, under the delusion that what can be repeated is of necessity understood. Almost any child of normal intelligence can be coached to repeat numberless nursery rhymes at 2 or 3 years of age. Almost any 6 or 8 year old child can be coached to repeat long and complicated extracts from classical literature or from religious catechisms without more than the vaguest idea of the meaning involved.

It is true, however, that, although not at first understood, such materials, well established during early childhood, often become part of a foundation which comes to the surface easily when needed later in life, when it will be better understood. In other words, basic precepts, established early and well, can serve when needed throughout life. There is defense for this viewpoint in the evidences available that a native language, learned early, may lie in disuse throughout an ensuing lifetime, only to make its appearance when senile decay has erased all later memory acquisitions. The danger of such rote learning comes when children are coached under the wrong conditions or when lapses in the perfection of learning produce punishment for failures which the child cannot overcome without too great strain. Under such conditions the child comes to hate rather than to like the material thus forced upon him, and comes to resent the school or institution which thus demonstrates its lack of human understanding.

Material which is understood by the child can be memorized with far less effort and with far better emotional feeling. Knowing this, progressive churches and schools have made every effort to help children through stories, dramatization, audio-visual aids and other interest-rousing and meaning-clarification devices. Reading preparation in kindergartens is helped by placing printed placards directly on the object (e.g., "TABLE" placed on the table), thus shortening the process of association between printed symbol and the object itself. Learning the multiplication tables and other fundamental number combinations is done through playing games which use the combinations over and over in fun situations. Learning of the classical poems or speeches or extracts from literature is done through dramatization of the ideas, through class analyses of the meanings, and similar expedients.

Aids to Memory. In school the practice of recitations during part of each class hour helps children to review the material read and, hence, to remember it better. Studies have proved that review and testing of materials studied helps to fix the memory of the materials, particularly when the reviews and tests are spaced judiciously. Spelling, the fundamental processes in arithmetic, and word recognition in reading call for permanent retention of material which is not in itself meaningful. History and social science, however, call for retention of a different type of material. When, as in spelling, fundamentals of arithmetic and word recognition, material cannot be made meaningful, permanent and accurate retention can best be assured by a degree of what is called "overlearning," or learning by drill beyond the point where the material can just be recalled accurately.

Imitation as Aid to Learning. Much learning of younger children in language and action, and of older children in social practices and attitudes, is due to imitation. Many aspects of body postures and habits, tones of voice, diction and vocabulary, emotional reactions and mental attitudes are imitations of those the child sees or hears about him. Luckily, he copies the good as readily as the bad unless

the bad is made more interesting and dramatic than the good. In most families, neighborhoods and schools, the number of things offered to children as learning patterns which are good and should be copied far outweigh those which are bad and should be avoided. Sometimes it seems hard to convince parents and teachers of this, largely because they take the desirable learnings for granted and tend to see and remember only those pieces of behavior which cause trouble.

In a study of learning by imitation in kindergarten children Rosenblith (1959) found that having a model reduced the number of trials needed in learning. What models children choose to imitate deserves consideration. In general, they imitate (1) the models they are exposed to first and most continuously. These are the parents. Teachers are also important models. Each teacher, however, is present in the child's life only one year, or, in high school, five hours a week for one or two years. Parents remain the same from year to year. Thus, any given teacher is likely to have less permanent influence than the parents. This is fortunate when the teacher's model is bad, unfortunate if good, especially if the general influence of the parents is bad. It is important that both parents and teachers should set a good example. However, they should not attempt to do this in such detail that their own behavior becomes strained and artificial.

Children also imitate (2) models whom they like. Occasionally, a well-loved teacher leaves an impression on a child for life, even though he or she is with the child only a year. Children and adolescents tend to imitate each other because they like other children or young people and find them (3) more interesting or (4) more exciting than adults. Any model which is dramatic or exciting attracts attention and is likely to mold children's behavior in some degree. This is one reason they take up slang, which is colorful, or profanity, which is explosive, or "dirty stories," which carry an "exciting" atmosphere. Children also often imitate (5) some older person or child because such a person represents being grown-up, which is in itself interesting. Parents again have a special priority in this type of imitation because a 2 to 10 year old boy's idea of "grown-upness" is ordinarily his father, and the little girl's idea is her mother. The imitation of specific acts is a surface imitation. In time the child internalizes, or makes his own, certain ideas and values to which he is exposed. The ideas and values most likely to become his are, in the long run, those of his parents.

Adults do not always handle the subject of imitation of behavior wisely. It is not wise, for example, to single out the neighborhood or the schoolroom bad boy or girl for constant harangue or punishment. It calls too much attention to the poor example. Such a boy or girl should be dealt with as inconspicuously as possible in order to avoid calling the attention of the other children to his or her behavior as a possible model for imitation. Making such a child conspicuous may suggest to some otherwise bored child a way of stirring up excitement for himself. It may also rouse the sympathy and support of children who may jump to his or her defense because they think of such a child as being "picked on."

Another frequent adult mistake is to hold up individual children as models for praise to the group. Few children react to such preaching favorably, even though the calling of the group's attention to the praised child would seem, in the light of the above paragraph, to be a good way of inspiring imitation. The trouble seems to be that children singled out for praise are likely to become intoxicated with it

and to become obnoxious to the other children. Then, too, in spite of the fact that modern schools have eliminated, as a rule, the old feud between teacher and pupil, a child who is considered "teacher's pet" is seldom popular. It is unfair to any child to attach that stigma to him by holding him up as a model to the rest of the group. More than this, the usual implication of "Look at John; why can't you be more like him?" is that there is something the matter with you. This does not tend to rouse favorable emotional response. Hatred of the model and a determination to avoid anything associated with him is far more likely to result than is a supine reflection of the model's behavior. In fact, any child who reacts positively to a model so held before him is probably only courting adult approval while hiding an inner resentment.

IMAGINATION

Desirability. A question often asked by parents and teachers is: "How much should children's imaginations be cultivated; how much repressed in favor of an acceptance of cold facts?" Good progressive educators seem to have solved the dilemma fairly happily. They recognize imagination as the foundation of all progress; yet they realize that any activity of the imagination which interferes with the orderly and efficient meeting of routine living or with the carrying of ideas into fruitful, productive action is ordinarily to be discouraged. Imagination which leads to constructive action is good; that which interferes with or becomes a substitute for necessary action is bad. The action, to be sure, may be only the telling of an entertaining story to others, or the writing of a play, however pointless, or the creation of an invention, however useless. Pointless plays and useless inventions may be socially futile; but psychologically they represent a healthier use of imagination than a sheer retreat or fantasy would.

In progressive education we find much use of children's imagination and much encouragement of individuality in style and variety of writing, storytelling, craft production, and other forms of activity. However, even though the more imaginative traditional Mother Goose and fairly tales become part of nearly every child's knowledge of literature, the major emphasis today is upon the "here and now" type of story or dramatization. These "here and now" stories deal with the fireman or policeman or similar activity chosen from the near environment for younger children, and with other topics chosen from the wider environment for older children. They are factual and current in the child's experience and provide him with a wealth of information.

In addition to this, good progressive education builds up scientific information through practical experiences which the child can see and create himself. This serves as a background of fact against which children can check "what they *think* is" against "what is." Thus, with increasing knowledge, fantastic or impossible ideas tend to fade in favor of creatively possible ideas. Not only is a background of facts built up as a groundwork for realistic thinking in this way, but the child is also given continuous practice in checking ideas against facts, a habit which marks the difference between a "wishful thinker" or impractical visionary and the practical thinker or creative producer.

Constructive and Destructive Imagination. The problem of education becomes, then, the problem of helping children to learn to use their imaginations constructively rather than de-

structively. This involves acquainting children with as wide a set of scientifically accurate facts as possible. It means training children in the habit of using facts rather than wishes as a basis for thinking. It means training the courageous honesty and foresight which make lying foolish and shortsighted. It means understanding and guiding children's lives so that they can find the kind of emotional satisfactions in their own real worlds which will keep them living in reality, rather than permitting their real worlds to become so starved or unpleasant that they are forced into the world of fantasy for normal satisfaction. All this involves fine programs (1) in schoolroom teaching of subject matter, (2) in daily schoolroom experiences which make the subject matter live and function in the practical, real lives of the children, and (3) the soundest possible understanding of the needs and experiences of each individual child so that his school and his out-of-school living prove emotionally satisfying to him. Teachers and parents should understand signs of wrong uses of imagination and should be trained to turn wrong satisfactions into right uses and right satisfactions.

Children's Imagination. Make-believe and other imaginative activities occupy a considerable part of the mental life of nearly all children from 3 or 4 to 10 or 12 years of age. The easiest device we have for knowing this is observation of children's play and of their speech. In the early school years some light can be thrown on the content of children's imagination by studies of their dreams and of their expressed wishes. Wann et al. (1962) found that today's young children go far beyond the world of "here and now" which dominated their perspective one and two generations ago. Through television and the other mass media, along with frequent trips in the family car, they have a far wider exposure than was previously possible. This greatly enriches the quality of their play as well as of their drawings and their stories. It enhances the value to the child of make-believe, by virtue of which he can transcend his actual limitations and can go beyond the restrictions imposed by reality.

Insight into children's emotional problems can often be found in studies of their imaginative play, their casual conversation or their dreams. Desires and needs which have been forbidden natural satisfaction often come out in play or talk or dreams when the child feels free of the censor which forbids the more natural outlet. Most expression of such suppressed or repressed needs is unconscious, the child being quite unaware of what he is revealing. Only trained specialists should attempt to read deeper meanings into children's play or dreams, but much insight into the less deeply hidden emotional needs can be gained from observations of play or translations of dreams (Hartley, 1957, 1959).

Imaginary Companions. Preschool children deprived of satisfying companionship with other children of their own age group are likely to substitute for this a child or children who live in the imagination. Even in nursery schools, however, where children have a group of children their own age to play with, imaginary companions are common, several studies showing as high as one-third of such children having imaginary companions. In competition with other children, however, envy of a playmate's baby brother may create in the imaginary companion a baby brother who is lacking, or a parent possessing the envied characteristic of some other child's parent. Boys as well as girls have imaginary companions; extroversive, popular children have them, as do keenly intelligent children.

They are occasionally so extremely vivid that a child may cry in distress because someone sits in a chair occupied at the moment by the imaginary companion, thus squashing him.

Some people suggest dealing with imaginary companions by "playing up" to them, inviting them to dinner in order to get a stubborn child to eat his own meal, or laughingly laying the blame for a child's forgetfulness or carlessness upon the imaginary companion. This is unfortunate since it makes the companion too real. We must remember in dealing with imaginary companions that children often have difficulty in differentiating between real things and imagined things. Adults should not add to this confusion by treating imagined things as if they were real. Children, too, often discover without help the trick of laying blame on the imaginary companion or of using the companion as an excuse. This habit of projection of blame or negligence upon someone or something else should not be encouraged.

On the other hand, it is not wise to treat these companions as a ridiculous fancy or to punish children for them, since this only drives the companions under cover where they are likely to do real damage. They should always be kept in the open. Only so can we know how important to the child they are and how much of the child's time and attention they occupy.

Imagination during School Age. Entrance into school is the peak period in imaginative play. As Strang (1959) puts it: "There seems to be a period, somewhere between five and seven years, while the actual world is no longer new and strange to them and before they become matter-of-fact, when fairy tales add new delights to living for the imaginative child." As children enter the primary school period they can begin to control imagination for useful purposes such as storytelling and painting, on the one hand, or sympathy and understanding, on the other.

Sympathy, as based upon the capacity to imagine how other people feel in given situations, develops from 4 years on through the elementary school years. Genuine understanding of how other people feel, except for the most imaginative people, is based upon some personal experience in the given situation. Sympathy for a wide range of situations is not, therefore, usual until adulthood when the individual has accumulated a wide range of experiences.

Children of 9 to 12 believe in luck, magic and superstitions—ideas which continue throughout life unless the children are given facts with which to correct these impressions. For example, earlier in their lives they have probably believed in Santa Claus, the Easter bunny and fairies. As they mature, however, they have been able to replace these ideas with the facts, in many cases preserving the desirable aspects of the former belief in the idea of Santa as the spirit of Christmas and giving, of Easter as a deeply significant reawakening, of fairies as the spirit of adventure and making hard things come true. It is at the elementary school age that facts ordinarily come to replace the more childlike phases of the imagination and that satisfactions with the peer group prove more genuine than satisfactions from daydreams. Belief in luck, magic and superstitions should give way to facts as the child approaches pubescence.

Imaginary Illness. Another trait of imagination which should not be encouraged is imaginary illness. Some children have discovered that complaint of pain or refusal to eat causes real anxiety to the parent, or gets sympathy and excuse from work from the teacher. Such an exciting way to get attention or such an easy escape from an unpleasant task is a great temptation. Adults must be watchful

lest children learn the habit of "cashing in" on weakness, since, like projection, this is a destructive practice. Children who tend to do this should be quietly but firmly faced with what they are doing and helped to undertake the disagreeable task instead of running away from it, or to learn better ways of bidding for adult attention. Adults must, however, be very sure of what they are doing here, since to ignore a child who is really in pain, or to force a child to work when he is really ill, especially to imply that he is a liar when he is not, gives rise to a deep sense of outrage and injustice. Any child who is in pain or ill should not be ignored. The only safe rule for the adult is that if there is any doubt about any given situation, the child should be taken at his word. A further suggestion is that when illness occurs, it should not be made any more dramatic or satisfying than is necessary to keep the sick child comfortable and reasonably happy.

Daydreams. Daydreams are part of normal development in children. During the elementary school years children are likely to daydream of adventure and conquest through physical feats; in adolescence they are likely to wander about mentally in wealth and luxury or in romantic conquest. These daydreams sometimes become so complicated that they require genuine concentration of attention to follow, in which case the passive fantasy either turns into a form of businesslike, uphill thinking or is abandoned because it bogs down of its own weight.

It is generally agreed among child psychologists that almost every child daydreams to some extent. Abnormality is to be recognized when the fantasies become persistent and symbolic of deeper or hidden wishes and conflicts. It is then that we know the child has escaped into the world of unreality where the events and occurrences of the real world play only an incidental and unimportant role in behavior. The milder forms of systematic fantasy probably serve as a desirable outlet for repressed conflicts which, denied all expression, might become dangerous. However, a decrease in the quality of a child's schoolwork, lagging concentration and wandering attention, particularly in children whose behavior has not previously had this quality, should be regarded as possible symptoms of a deeper psychological trouble.

As in every other form of imagination, there is a constructive and a destructive use for daydreams. Most of us have to dream of conquest before we exert the necessary effort to make a conquest real. We must dream of ourselves as more poised, more learned or more successful before we make the effort to learn social poise, to study or to improve at our jobs. Adolescent daydreams, which picture the young person to himself as a better, finer, more successful person than he is, are often the motivating force which leads to the necessary action. Daydreams which lead to such action are good. However, many daydreams are of the sort that lead to discontent with the world we must face when the dream is over. These are often stimulated by highly romantic movies or novels which picture a path of roses or a degree of luxury impossible for most mortals. Hours spent with such movies and novels are good if they give rest and a momentary fulfillment of ordinary longings for romance and luxury, leaving one rested and willing to take up again the routine of life as it is. They are bad if they deepen discontent or if they prove so attractive that the individual gives up the struggle to adjust to life as he must meet it and retreats into the world of fantasy.

We can see tendencies in either direction in young children. The 5 or 6 year old child who consistently prefers his imaginary companion to readily

available real companions is probably revealing the fact that he cannot "take it" with real children. His imaginary companion is manageable, does as he is told, offers no resistance to the child's domination. Real companions are not so manageable. However, for the average, normally extroversive or outgoing child, real companions are more fun because they have more ideas. Living with an imaginary companion is satisfying to a child through more than a year or so of time only if he is either a keenly imaginative child who can keep himself endlessly amused with his own ideas, or a deeply frustrated child who cannot find normal happiness in the company of other children. No child who prefers an imaginary companion to a real one can be changed in his preference by scolding or punishment. He can be changed only by being shown how he can gain increasing satisfactions from real children, and this takes a great deal of understanding and patience on the part of adults as well as some cooperation from the other children who are available.

Autism (absorption in fantasy as an escape from reality) may be the result of family dynamics which enable autism to occur; to circumstances external to family control; or to assaults on the child's psychological organism (Sarvis and Garcia, 1961). In its extreme form autism is often referred to as schizophrenia. Although this type of withdrawal is fairly frequent in adolescence, its appearance in infants and young children has also been noted. Although such children do many things of a simple sort, such as riding a tricycle, climbing, tugging at one's sleeve, they spend much time sitting or standing quietly. They tend to lack sensitive interchange between speaker and listener. Tantrums and self-destructive behavior may occur. Fortunately, this type of behavior is infrequent, but when it occurs it should have skilled professional attention (Ferster, 1961).

Exaggeration. Children who exaggerate do so to make an impression. All children do it sometimes, the periods when it is most usual being in the gang stage when there is a great need to appear equal to the peer group in strength and possessions, and in the adolescent period when the need takes a slightly different and often even more intense form. Boasting about possessions and accomplishments, either real or imagined, should not be taken too seriously by adults unless it becomes a habit which carries the child too far astray. It is bad when the child indulges in it in the face of taunts and checkups from his peers, showing thereby that he fails to realize that he is not "getting away with it." It is bad, too, when the boasts about things that are not true become so habitual that the child loses track of what an accurate statement really is. It is bad when it becomes an evidence that the child is failing to impress his peers with real accomplishments and is, therefore, filling the gap with words in place of deeds.

Again, as above, the best weapon to use in correction is not punishment but, rather, help to develop in the child a wholesome pride in his accuracy. Sometimes it helps if he can be made to realize that increasing ostracism from the group is the result of his tall stories without deeds to back them up and that a better way is to do the deeds and let someone else tell about them if they rate being told about. Children who are physically handicapped are among those who may find it too hard, or even impossible, to gain normal attention and affection from children of their own age and for whom, therefore, the temptation is great to resort to daydreaming or to false boasts. These children need a special program to teach them how to make life interest-

ing for themselves and for others through the development of traits other than those involved in vigorous physical play.

Children's Lies. Children's lies, as differentiated from mere exaggeration of facts, offer a sufficient problem to the average teacher and parent to be given some discussion here. All children lie sometimes, since a number of types of lies are simply the product of usual developmental patterns. The natural boasting mentioned above belongs in this classification and occurs in the natural development of bids for attention from one's peers at the gang age or at adolescence. The confusions between fact and fancy which are characteristic of 3 to 6 year old children are another type of so-called lie which is the by-product of a stage of development. Many of the preschool child's compromises with the truth are the result of his genuine inability to discriminate between what happened and what he imagined as happening. Children of preschool and early school age see many things taking place around them which seem the result of magic or fairies. They see someone push a button near a door and flood a room with light. They see hard green apples go into an oven and come out soft and brown. Without the knowledge of the magic in electricity or the effect of heat, these things seem no less marvelous to a 4 year old than that a fairy should grant any childish wish he may think up. Experience with real things and a widening knowledge of science help the child to discriminate with increasing accuracy between fact and fancy.

Some children lie playfully, watching to see the effect of the "whopper" upon the audience. The fact that other children of equal or of less factual experience sometimes believe these yarns leads children to take a chance on what adult reaction will be. This is especially true in the gang age and again in adolescence. Not infrequently the adult reaction is (and should be) a laugh rather than a scolding. It is probably wise for the adult to add "You don't expect me to believe *that,* do you?" or some other indication that the yarn is understood as a yarn. Occasionally, children begin telling a story based upon truth, only to find themselves captivated by possibilities for embroidering the original fabric. In time they learn the difference between telling a story to amuse people (as they themselves are amused by talking animals, etc.) and reporting a factual situation.

Some children's lies are lies of loyalty to protect a friend in trouble or to appear noble in assuming blame and punishment to protect another child. This is particularly likely to happen during the gang age. In the long run we wish to develop such loyalty, but children need help to differentiate between when such protection is wise or noble and when another person needs the lesson of being faced with his faults or mistakes.

Somewhat more serious than these are the lies of fear. Many children lie to avoid punishment or to escape the consequences of what they have done. These lies may occur when punishment is too severe for the child to bear without trying to escape. In this case, the severity of the punishment should be lessened and a more understanding attitude adopted toward the child. In the occasional cases in which the child's total personality makes him retreat from ordinarily difficult situations, the demands of the situation may have to be lightened enough to locate the point at which the child can face the situation without retreat, and the severity gradually increased as he proves able to take the load. Otherwise, he may be driven by too severe discipline into exaggerated symptoms

of nervousness and withdrawal, or he may be forced into more and more clever evasions.

Some lies which attempt to cover up work not done or to gain a reward show a wide resourcefulness of imagination in their inventiveness. If the work is too hard for the child's ability, or if an overemphasis is put upon stars on the blackboard or honor listings, children cannot help being tempted to gain what is expected of them but what they cannot win honestly. Cheating is often produced in this way. Public rewards should be varied enough to give children of all levels of ability a chance at the publicity. If, however, a child's lie is an evasion of a reasonable job or an attempt to gain a reward which he could gain with reasonable work, then the problem becomes one of helping him to understand that such behavior is less satisfactory in the long run than the effort of doing the necessary work would have been.

Some children lie because an adult puts them into a corner and through overpowering suggestion compels them to say what is expected regardless of whether or not it is so. Some children cannot bear to "let down" their parents or teacher and even though they can easily take a punishment, they cannot bear to disappoint people. Occasionally, an unwise adult by third degree methods extracts a confession which later proves to have been false. There are few ways of damaging children's psychological lives more severely than this. When in doubt, it is better to let a child get away with a lie than to make him confess falsely.

There are also lies to gain selfish ends and lies to get revenge or to tear down someone else. Children who try out a lie or so in order to get what they want usually learn from one or two experiences that it does not pay. If, however, any child sticks persistently to lying for selfish purposes or to get back at other people, he reveals a fundamental problem that should receive the attention of a specialist in children's behavior. If no specialist is available, the parent or teacher should make every effort to analyze why this child must get what he wants at no matter what cost. (1) Is he spoiled and in need of a gradual development of pride in doing work, adjusting to the needs and desires of others, learning "to take it"? If he is spoiled he must be handled firmly though gently since a too brutal hardening process will either break him or send him into a corner with his back against the world, there to develop still more clever devices for getting his own way. (2) If he is so starved for love or for status that he must lie to gain that for which every child hungers, then every effort must be made to give him what he needs in security and status by honest means within his command. In every case of dishonesty in children, the development of pride in honor is a better way to proceed than to attempt to govern the child by fear of the consequences of dishonor alone.

Genuine understanding of the difference between fact and fancy, between what is and what one wishes were, between taking an advantage now as against curbing oneself in favor of the future—all this requires a well-developed and well-disciplined imagination. Development of the child's sense of honor, self-control, a vision into the future and an ability to recognize and accept his own feelings should remain a clear objective for parents and teachers in the guidance of his developing imagination.

CREATIVE ABILITY

Definition. "Creative ability is usually regarded as a special talent or aptitude which manifests itself late in adolescence or in adulthood and some-

what exclusively among young people and adults who are not quite normal in other respects." Millard (1958), the author of this statement, goes on to point out that nothing could be further from the truth and that creative ability is present to some degree in nearly all children.

The belief by some misguided persons that to be "creative" is to be "different" or to "express oneself" has led in certain quarters to the assumption that the way to develop a creative capacity is to encourage children to express any and every impulse. Millard calls attention to the fact that creative ability does not include every uninhibited word or act. Deviations in thought and action provide important insights into personality, but not all such differences in behavior can be called "creative."

Creative Ability and Intelligence. High creative ability is related to high intelligence (Getzels and Jackson, 1962). It is not, however, simply a matter of intelligence. Although a high level of intelligence is necessary for such creative fields as nuclear physics, it is less necessary in the graphic arts. Many persons with a high IQ are low in creativity (Gough, 1961). Highly creative people show a preference for and an interest in complexity and novelty rather than for stereotypes (Barron, 1961).

In their study of "highly intelligent" and "highly creative" adolescents, Getzels and Jackson (1962) concluded that the "highly creative group" do as well scholastically as the "highly intelligent group," but the former tended to be less well liked by the teachers and were less success-oriented generally than were the latter group. The "high creative group" were more humorous and intellectually "playful," more relaxed, less conforming socially and intellectually, and were more aggressive in their fantasies than were the "highly intelligent group." Parents of the "high creatives" tended to be less vigilant, less "bookish," less obsessional and critical of their children than the parents of the children with high IQs.

These authors suggest that it may be that the reason IQ and creativity are not frequently related is because we have used the IQ in a narrow way which, if broadened, might enlarge our view of how intelligence operates and thus avoid such a "curious contradiction" as that IQ and creativity are not related.

How Creative Action Occurs. Creation occurs in the realm of thinking, as well as in art forms. The value of "inspiration" in scientific invention and research, in creative planning for industry or government, and in one's own planning for daily living are known to us as "creative thinking." That such creative production in the deeper realms of thinking comes "out of the clear blue" is an idea with no foundation, according to Walters and O'Hara (1953), who point out that the available evidence shows clearly that "preceding the moment of inspiration there is usually a more or less prolonged preparation, much of which has been devoted to hard work or study. Apparently nothing comes out when the basic ingredients have not been put in, although the organization and form may be truly new and creative."

For significant contribution to any of the art fields, there is need for a solid background of hard work, for knowledge of the works of others, and especially for mastery of the basic techniques of the art involved. No composer, writer or painter produces anything enduring without a solid background of technical knowledge and skill. This comes only with long and concentrated work.

Creativity involves also, in addition to the hard work and self-discipline of the master creator, an identification

of oneself with the creative activity, the element of self-expression through the medium used, and an ensuing feeling of progress, success and personal release with resulting peace or happiness. Even in the rudimentary "messing" with finger painting or with clay or with shop tools in one's basement, there are the facts of self-identification, self-expression and emotional satisfaction. What seems to be necessary with children is to give them, from early babyhood, self-initiated opportunities to use toys, to build with blocks, to use imagination with a wide variety of "do-with" toys, to express thoughts and feelings in words or in action, and to feel the satisfaction of such self-expression so long as it is not destructive to others, to property or to their own futures. Thus, the child is encouraged early to be independent in his thinking and expression so that his individual personality can find avenues of expression which are his own. Lowenfeld (1958) summarizes a discussion of the difference between creativity or self-expression and imitation of the ideas and actions as follows:

Self-expression contrasted with	*Imitation*
Expression according to child's own level	Expression according to strange level
Independent thinking	Dependent thinking
Emotional outlet	Frustration
Freedom and flexibility	Inhibitions and restrictions
Easy adjustments to new situations	Getting along with set patterns
Progress, success, happiness	Leaning toward others, dependency, stiffness

Thus we see that doing what one is told all the time, or drawing, painting or using any other art form on a copy or imitation basis is to lose the point of the whole performance.

Stages of Development of Creative Skills. As with all other skills and abilities, the creative skills and abilities grow and develop through definite stages. Certain basic neural and muscular developmental maturities must be present; certain preliminary stages must be gone through; certain motor, intellectual and imaginative skills must be achieved; certain knowledge and appreciations must be cultivated; certain natural "bents," "interests" or, in exceptional cases, talents must be present. "Training" or "lessons," per se, can accomplish nothing without these.

Each art goes through certain preliminary and then later stages of development. Lowenfeld (1958) traces development of art through such stages as "disorderly scribbling" (around age 2), longitudinal or controlled scribbling, naming of the scribbling, achievements of form concepts (7 to 9 years), the dawning realism (9 to 11 years), the pseudorealistic or reasoning stage (11 to 13 years), and the period of decision (adolescence). He points out, of course, that these are average ages and that, as in all growth, children pass through these or other stages at different ages, depending upon talent and opportunity.

Comparably, children go through rather specific stages of development in music and rhythm (dancing) activities, in clay modeling and sculpture, and in other art areas (Read, 1960).

In general, whatever the specific creative ability, early success in autonomous discovery in children has great motivational value for further application to the given creative activity.

Free creative performance is a function of grade level and of sex. Children show a steady increase in creative thinking in the first to the third grade, decreasing during the third and fourth grades, and recovering in the fifth and sixth grades. Boys tend to become superior to girls in almost all aspects of creative thinking measured in one study (Torrance, 1961). The fifth and

sixth grade decrement (above) was later translated by Torrance (1962) into decrements likely to occur at about 5, 9, and 12 years of age.

Käräng (1964) set up a number of techniques for studying creative work. He found that the free creative work of children changes noticeably during the period of puberty.

Suggestions for Parents and Teachers. As was stated above, if creativity in children is to be encouraged, children should have opportunity in babyhood and in early childhood to use toys and other play experiences on an imaginative and free basis. Murphy (1958) says that "the first problem that confronts parent and teacher is how to avoid overcontrol: how to allow the first generous outpouring of mind and heart to have its way. We know relatively little about how to encourage but all too much about how to impede." Free play situations, "do-with" toys, and plenty of paper, pencils, crayons, paint, clay, scissors, blocks and imaginative stories offer stimulus to the imagination, training in techniques to the hands, in independent thinking to the mind, and in joy of self-expression to the emotions. What children of different ages do with these materials can be seen in Figures 69, 70, 71 and 72.

If "genius is to burn" in any child it will require opportunity and some encouragement, but no forcing. Many a good potential artist has been ruined by too formal lessons and too long hours of "practicing" too soon in the

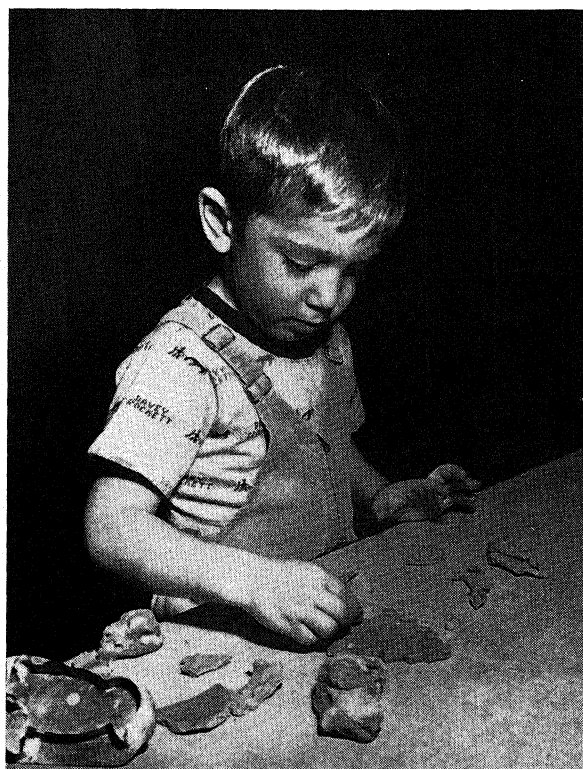



FIGURE 69. The 3 year old creates with clay. (Courtesy of The Merrill-Palmer Institute.)

FIGURE 70. Eight year olds create with wood. (Courtesy of The Merrill-Palmer Institute.)

FIGURE 71. A 10 year old creates with linoleum. (Courtesy of The Merrill-Palmer Institute.)

maturing process.* Millard (1958) charges teachers and parents to have unlimited patience and to be willing to provide time for creative ability. Recognizing the wide individual differences in areas of creativity for each child, he urges that the widest possible variety of areas and of media for expression be made available to children. Lowenfeld (1958) is quite specific and says: "Don't impose your own images on a child. . . . Never prefer one child's creative work over that of another. . . . Never let a child copy anything." Probably the most important thing to accomplish in creative activity is that it should be enjoyed. Laudeck (1952) points out that the goal of music is enjoyment, and few pleasures are more stimulating and rewarding than the close sharing experienced in the creation of music. She urges parents, teachers and children to cast aside inhibitions and to have fun with music. This should be said of all forms of art. Families can enjoy them together on a purely amateur basis with rewarding results in mutual enjoyment, not only of the art or of the shopwork (however rudimentary) but, even more important, of each other.

The importance of training in the expression of emotions and of individuality through creative activity is receiving much attention in the mental hygiene field. Constructive use of

*Many of the best piano teachers now proceed on the sound psychological basis of accepting for lessons (with the rarest exceptions of outstanding talent) only children of 8 to 10 years because they can reach sixths on the piano (there is little interesting work written in thirds) and have the maturity level to proceed into fairly serious work. These teachers also refuse to let a child practice for the first year or so unless the teacher is present (thus avoiding the practicing of too many errors), and thereafter upgrade the amount of practice permitted as it becomes evident that the hours put in will be of benefit.

FIGURE 72. Thirteen year olds create with odds and ends. (Courtesy of The Merrill-Palmer Institute.)

leisure time in a world in which working hours are being shortened and in which commercial recreation of a passive type is on the increase becomes of greater and greater importance. "The devil finds work for idle hands to do" is a maxim which leads to an emphasis upon both physical play programs and upon the development of love of music, art, reading, crafts, gardening and other constructive leisure time activities. These programs have in mind not only the prevention of delinquency but also the enrichment of living. An important way to heal sick minds is to give hands and intellects something creative to do and to enjoy. Human happiness and purposefulness in living are greatly enriched because of interests and skills which occupy time richly rather than leaving it empty or filled only with cheap movies or noneducational radio or TV programs.

Programs in school which train hands, eyes and ears in arts, crafts, music and dancing are considered helpful not only as creators of good leisure time activities but also as mental health devices and as means of training children in concentration and satisfaction in work.

EXPERIENCES TO VITALIZE CLASSWORK

1. Discuss the pros and cons of requiring rote memorizing:
   a. In the primary grades.
   b. In high school.
2. Visit a church school. Are its methods conducive to the development of genuine insight into the principles being taught? Is any provision made for helping the children to live the principles taught?
3. How would you decide whether a poor speller:
   a. Was defective in general memory?
   b. Was more auditory than visual in his type of imagery and therefore less able than average children to remember how words look?
   c. Was unfamiliar with English at home, hence lacking in a basic understanding of and familiarity with the words he is trying to spell?

   What could you do about each of these?
4. From the discussion on types of models imitated by children can you make any suggestions for improving the models you saw in action in the last schoolroom (or Sunday school) you visited?
5. Visit a schoolroom or draw on your memory of one and list the things you saw which:
   a. Encourage destructive imagination in the children.
   b. Encourage constructive imagination in the children.
6. How can a teacher use children's creative imaginations in order to help them to learn rote materials like history dates, number combinations, spelling rules?
7. In view of your understanding of why children lie, how can you educate children to the value of truth?
8. What would you do with a child who gets sick just before the arithmetic period every day? with an adolescent who faints when sent to the principal's office? with a chronic daydreamer? with an adolescent who romances over movie stars to the neglect of school lessons?
9. From the discussion on creative ability, combined with what you have learned of motor (general body and vocal) skills, sketch a program that would teach art or music and rhythm:
   a. In the primary grades.
   b. In the intermediate grades.
   c. In high school.
10. Choose for class discussion selections from the readings below. Report to the class on what you have read.

SELECTED READINGS

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. Philadelphia, W. B. Saunders Co., 1963. Development of Creativity, pp. 398-409.

Chronbach, L. J.: Essentials of Psychological Testing. 2nd ed. New York, Harper Bros., 1960. Selected sections on creativity.

Lowenfeld, V.: Creative and Mental Growth. Rev. ed. New York, The Macmillan Co., 1957.

Tyler, L. E.: Tests and Measurements. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1963. Chapter 5, Tests of Special Ability.

Wann, K. D., Dorn, M. S., and Liddle, E. A.: Fostering Intellectual Development in Young Children. New York, Teachers' College, Columbia University Press, 1962. Chapter IV, Children Want to Know about the Phenomena That Surround Them.

DEVELOPMENT OF LANGUAGE

Newland (1960) says: "It is my contention that language development, by its very psychological nature, is first and foremost a function of the degree of general mental maturity of the child." In man, language becomes one of the most important implements of intelligence. Some behavioristic psychologists have, in fact, said that all truly human thinking takes place by means of language. This is probably not true, but it indicates something of the importance of language as an expression of, and as a means to, reasoning. Language is also a primary means of social intercourse, being used not only to relieve people's own feelings or to air their own views, but also to awaken a response in other people and to influence their attitudes and behavior.

Language depends upon, and at the same time underlies, one of man's outstanding characteristics, namely, the capacity to establish a wide variety of exceedingly complex social interrelations. Language and the formulation of social groups permits transmission from one generation to another, and thus gives rise to a new type of evolution not seen in any other species (Berelson and Steiner, 1964).

Speech behavior involves integrated action of the muscles of the abdomen, diaphragm, chest, neck, throat, jaws, lips and tongue. Children learning to

speak learn the larger movement patterns of the abdomen, diaphragm, chest and neck muscles first—their phrasing and inflection may communicate their meanings even though their articulations are not precise. Only later do the finer articulatory movements of the throat, jaw and mouth define both the vowel quality and the consonants of speech (Smith and Smith, 1962).

One of the most important tasks of schools is to train children in the facile understanding and use of their native language. To read quickly and with understanding, to speak fluently and accurately and to write intelligently are goals clearly set as educational objectives in nearly all schools. We cannot truly understand the culture and the thinking of any country until we understand its language. The same thing is true of the culture and thinking of one's own country. Therefore, an understanding of the steps of development in language skills becomes necessary to good teaching. However, when the child enters school and, therefore, before he has had any formal teaching from the school, he has made long strides in the development of language. This is, in many respects, a demonstration of an educational achievement of the first magnitude.

Language as Abstraction of Objects or Situations. We have seen something of how the baby learns about the properties of objects around him, how he learns to react intelligently to the situations which surround him. He does this more and more effectively in the realm of concrete objects and of concrete situations progressively throughout his life. After a few months of such learning in the beginning of his life, however, he starts the next step in "intellectualization," namely, he begins to associate voice sounds with various objects and situations. This development closely parallels other developments in the child, being related to postural control, feeding behavior and dentition (McCarthy, 1960). Learning to attach meaning to sound takes many forms. Even the very young infant learns to single out and to appreciate his mother's voice from all the other sounds which come to his ears. He learns to associate all the comfort of his mother's care with this sound so that in genuine emergencies her voice and her arms can bring comfort when all else fails. He learns quickly, too, to understand the meaning of crossness in her voice. Babies of a few months react with fear or with hurt feelings to scolding tones in the voice. By slow steps and constant practice they begin to single out from all the tones and words spoken a few words which have definite meaning. The baby of a year is fairly good at reacting to tones of voice and can react specifically to a dozen or so special words. From this point understanding of language progresses rapidly; the separate words, and later phrases and sentences, are substituted for or symbolize the objects or actions which they represent.

One of the amusing tricks of a 9 month old baby is to wriggle with anticipation when his cap is put on his head because he knows this means going out. By 12 to 18 months most children have managed to say the "bye-bye" which indicates going bye-bye, and the word "go" or "out" has entered the vocabulary. The tiny infant has no way of indicating that he is thirsty but to cry, with the result that the anxious adult may try out a number of possibilities before arriving at the drink which relieves the child. The acquisition of the ability to say "nuken" or "wawa," if understood by the adult, at once indicates the child's need, but only to the select circle of adults who understand this jargon.

Only when the child can say "water" or "drink" can he get results from the English-speaking public at large.

Most children have acquired an effective working vocabulary to meet immediate life needs by the age of 3; by the age of 5 they have acquired a vocabulary which expresses quite varied shades of meaning and makes oral exchange of fairly complicated thoughts possible. The next stage of abstraction lies ahead, namely, the recognition of a set of marks on a page which represent the words he has previously learned to speak. His first abstraction of the object or situation is to use a spoken word to represent it; now he learns words on a printed page as representation of the spoken word. Thus, he learns to read. Later he may learn a shorthand symbol as a further representation or abstraction of the written or printed word, or a mathematical or chemical formula as a representation of a very complex situation.

Factors Influencing Development of Speech. For the most part in our culture talking is a phenomenon which is closely associated with *positive interpersonal relationships* (McCarthy, 1954). An important part of learning to talk involves the identification of the learner with the one who is seeking to evoke talking behavior—usually *the mother* (Newland, 1960). *Home educational experience* is of great importance. This can be measured by: (a) experience with topics of dramatic play; (b) time devoted to stories, records and television; (c) time spent talking with the family members and maids; (d) education of parents; and (e) parental attitudes.

Children who are read to and exposed to books between the ages of 13 and 30 months were found to have larger vocabularies from 17 months on than did children of the same ages who had not been so exposed (Irwin, 1960).

Important also is *peer influence* in the (a) use of language with peers; (b) friendly and aggressive interaction with peers; and (c) social acceptance by peers (Marshall, H., 1961).

Maturation in articulation skills seems to be correlated with *general intelligence.* There seems also to be a positive association between reading and *articulatory maturation.* A survey of the literature on this subject indicates that articulatory difficulties may be caused by the failure to establish *unilateral dominance* in general bodily skills. We shall have more to say about this later. Most investigators feel that speech generally does not develop until the large muscular mechanisms have matured sufficiently (Everhart, 1960).

Anxiety affects communicative efficiency, highly anxious subjects being less adequate in all complex performance levels (Gynther, 1957). The effect of anxiety on verbal learning is doubtless an aspect of the effect of anxiety upon all integrative behavior. The effect, however, is not the same on all individuals, some having substantially greater ability to tolerate stress than others (Korchin, 1957).

Another factor influencing the development of speech is *bilingualism.* Here the child is learning two languages at once. It has been generally thought that a second language can be learned easily when the child is in the process of learning his first language, although it has been recognized that in the learning of two languages at once the speed of acquisition of vocabulary in either language is slower than when only one language vocabulary is being learned. In a carefully controlled study of the teaching of Japanese as a second language in grades two, three and four, it was found that the fourth graders acquired the Japanese more effectively than did the second or third graders.

The superiority of the fourth graders in this, as in most tasks requiring growing maturity of intelligence, can be credited to the maturity of the older over the younger children, even though the younger children were in an earlier and hence more flexible stage of language learning (Grinder, 1962).

Church (1961) suggests that, in the acquisition of two languages at once, two stages may be distinguished: (1) the mixed speech stage in which the child uses the elements of both languages indiscriminately; (2) the stage of gradual separation and parallel formation of the two linguistic systems, in the process of which identical phonetic, lexical grammatical forms are learned simultaneously without inhibition, whereas different forms of both languages hinder each other. As time goes on, more autonomy of systems is developed and the child speaks each language as needed (Imedadze, 1960). Church adds that among the implicit principles around which the child organizes his language experience is one that defines how words (and utterances) sound in his own native tongue. In discussing the child's exposure and reaction to foreign languages, he says that if children pick up foreign accents more easily than adults do, it is probably because their incompletely crystallized framework of English interferes less with the new style of behavior in the new language.

How Language Is Learned. There are two processes involved when a child learns language. (1) He must master the control of breath, larynx and tongue necessary to speak. (2) He must make the associations between meaning and object or situation which were discussed under sense perceptions and sense judgments in Chapter 9. Language is good only to express meanings. If there are no meanings to express, the child develops no spoken language. Restricted general experience is at the root of the difficulty which some children have in mastering spoken language as a preliminary to the mastery of reading and composition.

Children learn language *by asking* for things they want, or "Why?" and "How?" and "Where?" and "What for?" Request words grow rapidly in the second half of the second year (18 to 24 months). Many errors in use of these request words are inventive and creative (Murata, 1961). Kaouri (1962) analyzed the questions of children from the first through the twelfth grade and found that the number of questions increased with grade. The largest single category is "Why?" throughout all the grade levels, although the frequency of this question showed a sharp drop between the third and fourth grades. The question "What?" showed a jump at this stage. Aikawa and Horiuchi (1962) found "Why?" at a peak in the sixth grade. They also found that small children ask "Why?" about objects; as they grow older they ask more "Whys?" about human life, whereas the "Whys?" about animals and plants decrease as school grades advance. These investigators list three developmental stages in the behavior of "Whys?": (1) the level of materially cognizing reality in late infancy and early childhood; (2) a transitional level; and (3) a level of socially cognizing reality at preadolescence.

Behind these questions is *the theoretical "how" of language learning.* Newland (1960) says: "I think of language development largely as involving conceptualization. The learning of words and language is bascially the acquisition of symbols, either in simple forms or in patterns."

Yates (1963) says that in speech it appears to be necessary for the subjects to be repeatedly informed of the extent to which the response being

learned is proceeding so that appropriate corrections can be inserted into the sequence where necessary. Such information in the case of speech comes from at least three sources: (1) kinesthetic and proprioceptive feedback from changes in the muscular and sensory apparatus involved in speaking and listening; (2) auditory feedback transmitted by the bony structures, particularly of the head; and (3) auditory feedback transmitted through the air to the speaker's own hearing mechanisms. These three sources of information supplement each other in normal speech. It is assumed that they are integrated at higher neural levels in the cortex of the brain (Yates, 1963).

During the 1950's a number of studies were done of the effect of an interference with the natural relationship between ongoing speech and the consequent feedback of information. Coleman (1960) defines feedback as "the return information the individual receives concerning the progress or outcome of his behavior. Feedback not only tells the learner whether he is proceeding satisfactorily but also serves as reward or punishment."

These studies showed that delay in feedback could lead to serious disturbances in the smooth progress of speech. When subjects in an experiment read aloud a continuous prose passage while at the same time listening to the reading through earphones which delayed this feedback by about one-fifth of a second, many showed a marked deterioration of speech fluency and other disturbances. The delayed auditory feedback (DAF) produced changes in the intensity of utterance, or sound pressure level of speech, as this phenomenon is also called. For example, the speech of a subject under DAF presented under noisy conditions in one study decreased in intelligibility as intensity of DAF was increased; there were nonsystematic changes as delay was varied, but no interaction between delay and intensity. In another study no change in intelligibility was found. In several other studies there were, under DAF, articulatory changes such as repitition of syllables and continuant sounds, mispronunciations, omissions, substitutions, a number of word endings omitted, and other such disturbances of smooth flow of reading.

If periods of reading under conditions of DAF are continued at intervals over varied periods of time, e.g., at intervals of a week or two weeks, some degree of adaptation to the DAF does take place, but the adaptation is not complete. Techniques in these studies have been varied, and Yates concludes that further research work will be necessary. There are, in the work that has been done, some implications of the work for the understanding of stammering behavior, but here as in other areas of the study of delayed auditory feedback, more research is needed (Yates, 1963).

The concurrent action of hearing oneself speak as a variable in the speaking reaction is referred to by Ratner et al. (1964) as delayed speech feedback (DSF). In their work, this group of investigators found a variable in the speaking reaction of children while they spoke under conditions of DAF, the effect upon younger children being different from that upon older subjects.

Sex Differences in the Learning of Speech. There is a popular quip that girls learn to talk sooner and more than boys—a status that lasts throughout life. Two studies indicate that this is not quite accurate. One study found that at age 5 boys tend to be superior in precision and girls in fluency of expression, but that on the whole the sex difference is small (Sampson, 1959). Study of kindergarten children

indicated that girls seemed to be superior in length of verbal response but that, on the whole, there were no other statistical differences between the sexes (Levison, 1960).

Sequences in the Development of Language. IN INFANCY. Once the basic functions of breathing and eating have been established the infant "coos and babbles" (McCarthy, 1960). Irwin (1957) refers to "a babbling stage of language," saying that one thing stands out clearly from the many researches on this subject, namely, that in whatever language the babbling or premeaning speech occurs, there is a degree of orderliness. In this stage vowel sounds become differentiated from the babbling, followed by the differentiation of consonants (Konishu, 1960).

Murai (1960) lists the first noncrying utterances as beginning at 1½ months of age, with an increase in the sound repertory of infants by the day until about the sixth month, when some typical babblings repeating the same sounds begin. He found imitative sounds and sounds which had meaning between the eighth and tenth months.

Illingworth (1962) lists the following sequence:

6 – 8 weeks:	Vocalizes when smiling.
12 weeks:	Squeals with pleasure.
16 weeks:	Laughs.
20 weeks:	"Ah - goo."
28 weeks:	"Ba - da - ka." Four or more different sounds.
32 weeks:	"Baba, da - da, mama." Combined syllables.
48 weeks:	Uses one word with meaning. Imitates sounds.
52 weeks:	Says two or three words with meaning.

Darley and Harris (1961) report, after a review of the literature, that it appears that the average child begins to say his first words by approximately 1 year, and that a delay beyond 18 months may indicate serious physical, mental, or hearing involvement. Illingworth (1962), however, calls attention to the fact that in the various stages of speech learning there can be remarkable lulls in development when the child, for no apparent reason, makes no obvious progress for some months at a time, then rapidly retrieves lost ground.

Up to 2 years of age, 50 to 60 per cent of the vocabulary is made up of nouns related to the child's egocentric being, and most sentences are composed of two or three words which are uttered in a "telegram style" (Kanishi, 1960).

The period from 3 through 5 years is one of great concern for words (Wann et al., 1962). There is also occasional confusion in the meaning of dual-meaning words, as illustrated by the comic strip character, Dennis the Menace. Dennis' mother is at the sewing machine. She says: "Please pick up that bobbin for me."

Dennis: "That *WHAT?*"
Mother: "Over there, dear. On the floor. That's a bobbin."
Dennis, looking at it with concentration: "No, it's not!"
Mother: "What?"
Dennis: "It's not a bobbin—it's just laying there!"

In the *nursery school–kindergarten* age there is greatly increased interest in the acquisition of language for precise expression of thoughts, as well as for intercommunication. Adult help is needed to provide opportunities to use language (Wann et al., 1962). In a study of preschool and kindergarten ages, Kowalski (1962) found that at these ages speech patterns are basically concrete imaginations in nature and are affected by school (if the child is in a preschool), by the family, and by the child's emotional tone and degree of self-reliance. The ability to tell stories is a function of the attractiveness of the situation and of the

stimulating influence of the social situation.

Menyuk (1963) elicited language from *nursery school and first-grade* children and found that children of these ages used in all of their language the structures and the grammar used by the adults to generate their sentences. That their word forms are still not clearly differentiated is illustrated by the 7 year old child, who, in looking over magazine pictures of the newest set of quintuplets, said: "I think these fifthlets are just wonderful."

The ratio of complex and compound sentence length to simple sentence length increases with age, a significant speech development in this area occurring in Japanese children, as in American children, between the third and fifth grade (Taguchi, 1962).

Specific Uses of Language. Probably the first use of language from the earliest vocalizations is to make known feelings, wants or needs and to secure information (McCarthy, 1960). "Go bye-bye," "Mine," "Bobby wants a drink," and the persistent "What's that?" "Why?" of the question-asking stage of the 3 and 4 year old child are examples. One investigator found that in a single day his 3 year old child asked 376 questions, and that his 4 year old child asked 397. This is probably somewhat high for average children but gives an idea of why this age is referred to as the question stage. Children learn anything faster if they can verbalize a stimulus prior to making the response to it (Murphy, 1962). This is true not only at 3 years, but in later years as well (Murphy, 1962). Even at 3 years language serves the purpose of simple narration, the incidents talked about usually being telescoped into a single simple sentence: "We went downtown," for example, covers all the exciting situations involved. Occasional children of 3 can enlarge upon this, and some children of 4 can tell enough of an incident to hold the attention of other children for short periods. Imaginative elements often creep in, possibly as a reflection of the stories being read to children at that age: "Once there was a big engine. It came right up to the door and asked for breakfast." Figure 73 is a composition by a 5 year 4 month old child who had not yet attended kindergarten.

The most complicated and advanced use of language is to express reasoning: "If I don't wear my mittens I won't get them dirty," or "Where does my dinner go when I eat it?" As the child's experience enlarges, and as his mastery of vocabulary increases, the form of reasoning he can do becomes increasingly complex. He is usually in the fourth or fifth grade before he can, for example, extract the meaning from even fairly simple reasoning problems in arithmetic if they are presented in written form. Somewhat earlier than this he can demonstrate fairly complex reasoning in practical or concrete arithmetical situations if he does not have to struggle with language. Training in the verbalization of reasoning goes on throughout high school and college, and even the keenest adult often struggles to find the particular word or phrase that will express the exact shade of meaning he is trying either to capture for himself or to convey to someone else.

Eight to 10 year old children often use variations in language for amusement. They love codes and secret languages. "Double talk" characterizes this age, as it also does adolescence, when it serves to cement the sense of group solidarity. Any code for letters in which to write secret messages, or any password which serves to mark off a separate social group or gang is seized upon avidly. Adults should respect this secrecy, since most of it is innocent. The carefully guarded secret password of one group of 9 year olds proved upon investigation by

Donna

1 THE Dragonfly Has FOUR WiNGS AND BIG BALLS For EYES. THEY CAN Go 60 MILES A HOUR

2. LADY BUGS SHALL HIS WiNGS.

3 GrasSHOPPER Has STRONG LEG

4

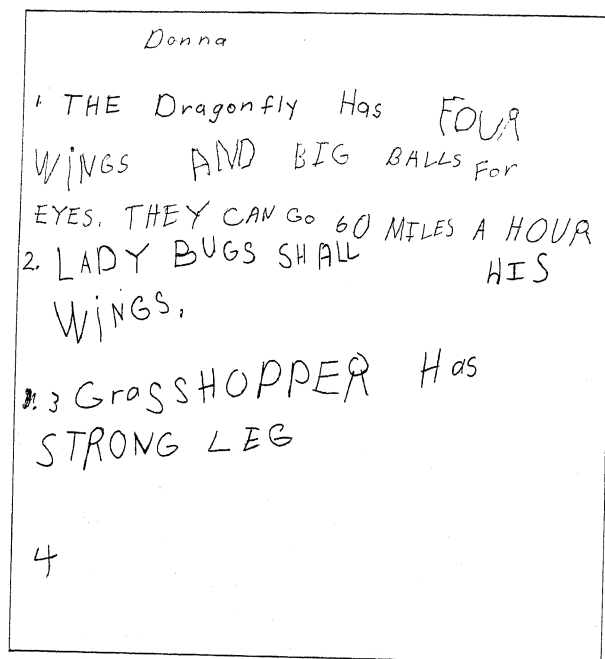



FIGURE 73. Composition of a superior prekindergarten child, 5 years 4 months of age, after hearing a "nature lesson" on dragon flies. (Courtesy First Methodist Church Playschool, Santa Monica, California, 1964.)

worried adults to be "sodium bicarbonate," and of another "Espanoza." Use of codes proves excellent mental exercise and, as in the Boy Scout signal code, a fine means of training children to alertness.

AS INDICATION OF FEELINGS. Speech is "the thermometer of emotional reactions" (Bayley, 1956). A number of investigations have shown that, in the content of speech of very young children, talk is dominantly about things which have emotional meaning for them (McCarthy, 1960). The first word or words of the vocabulary are often interjections or are nouns uttered with an interjectional inflection. Emotionally toned utterances are frequent and represent attempts to command, request, threaten, or express desire. This type of response in language decreases as the child gains in socialization and in facility of expression.

In content of language there is a predominance of egocentricity in the language of young children (Shimizu, 1957). The predominance of the pronouns "I," "me," "mine," so characteristic of the preschool child continues in the writings and conversations of children of school age. The 6 year old's insistent "Look at me. See me" is familiar to every parent and teacher. However, in proportion to the total number of words used in free conversation there is likely to be a decrease in the proportion of "I's" used throughout elementary school years (Biber, 1952).

Not only what is said by children, but the tone of voice, is important as an indicator of feeling. Children, having not yet learned to conceal their feelings from the world, burst out spontaneously with what they feel. However, there is one stage of language development during which the child's words cannot be taken literally as indicating meaning. For example, many 3 or 4 year old children swear with bombastic emphasis, not because they are that angry, but because they have copied a tone of voice from the

parent from whom they learned the profanity. The tone was exciting and dramatic; it captured the child's attention; he duplicates it, gets an exciting response as a rule from adults, and continues. If he gets no particular excitement out of his own use of the phrases, he usually soon forgets them in favor of language which nets more effective social results.

Four to 8 year olds characteristically "get tough," largely as an expression of a developing ego. Aggressiveness in asserting oneself and in dealing with others will be discussed as a desirable phase of personality development in Chapter 13. In dealing with other children, any early primary school child must use fairly obvious means to make his point. In addition to this, bombastic phrases "feel good" not only in the mouth, but as an inflation of one's own sense of security and importance. Therefore, such remarks as "I'll kill you dead!", "I'll chop your head off!", "You dumbbell!" and occasionally phrases which include gutter language referring to sex or elimination are common at this age. These, of course, have been heard; children do not invent such language. If adults stage a complete war on such language, children are likely only to be challenged to increases in toughness as proof, mainly to themselves, that they can hold their own. "Dirty" language is, of course, undesirable at any age. Probably the best way to deal with this is to give the child the proper anatomical and physiological words for sex and elimination with the understanding that if he wishes to refer to bodily functions he'd better speak correctly. This usually robs this area of unconventional language of its punch.

To try to make "a little gentleman" of a child at this age under all circumstances is likely to prove a severe handicap to the child in his peer group contacts if the adult is successful; or it may turn out to be a challenge to further toughness if the adult is not successful. Boys, particularly, seem in the average gang to need means of proving themselves unafraid. A few "You dumbbells" or even worse, hurled with good effect, may prove useful in gang adjustments. The lesson for children should probably be to learn to differentiate where to use such language and with whom. One does not, for example, call one's parents or grandmother "dumbbell" or "fool."

Even the best homes, however, feel some competition with outside contacts and find themselves fighting "it ain't" and "he done." The adult should be careful not to nag the child about inaccuracies in language so constantly that he becomes resentful or discouraged in his attempts to seek information and to share his experiences with his family. It is probably better to overlook some bad grammer than to develop a morose and uncommunicative child. Profanity, on the whole, seems easier to deal with. It is quite possible to develop in the child an ability to understand that even though some people may so express themselves, little children may not.

Correction of Faulty Grammar and Diction. It is useless to attempt to correct a child's bad grammar by telling him he will not be understood. "Me and him didn't have no fun" is quite understandable in spite of its bad grammar. It is more effective with children simply to tell them what is incorrect and what correct. Most effective, however, is exposure to good speech and good reading, since mere rules are monotonous and good reading and good speech can be made fun.

Bad grammar and diction per se must not be confused with certain errors which seem natural in the child's speech development. Nearly all preschool children show confusion in the correct use of pronouns because they hear themselves referred to by a

different set of pronouns than they use when referring to themselves. "Me go," "Bobby do" are characteristic 2 year olds' substitutes for "I go," or "I do." To nag a 2 year old about such mistakes shows a lack of understanding of how language develops.

Certain other errors are characteristic of children of elementary school age, the most frequent being errors of punctuation, capitalization, case of pronouns, use of adjectives and adverbs, and use of verbs. Some of these errors persist a long time. Most children have learned how to begin all sentences with a capital letter in the early elementary grades, but mastering a semicolon or a colon is a problem even for high school students.

Reasons for Language Retardation. Newland (1960) says: "It is my contention that language development, by its very psychological nature, is first and foremost a function of the degree of *general mental maturity of the child.*" Factors other than basic learning potential can, and probably do, play an important role in the nature and degree of language development. Among these factors is the *cultural background of the home*. For example, even though two children may be of the same mental level, the language behavior of a mentally retarded 10 year old child from a socioeconomically high level home may be found to be superior to that of one from a lower level home. Mental retardates, coming with somewhat greater relative frequency from lower class homes "are bathed in a less varied verbal atmosphere and hence have less opportunity to acquire larger vocabularies."

Mothers or fathers who have speech disorders do not furnish the needed model for speech. Mothers who have retained speech disorders tend toward emotional immaturity and instability (Dickson, 1962). Children who have speech disorders were found by Solomon (1961) to show significant differences from normal-speech children in over-all adjustment, peer group relations, manifestations of fears and anxieties, and tension outlets.

Some children with defective articulation are depressed in performance of selected motor skills (Prins, 1962).

Such physical defects as cerebral palsy create certain difficulties with speech such as accuracy of pronunciation, the cerebral palsied child typically having such difficulty (Irwin, 1961, 1962).

Deafness should be a first area of suspicion in cases of retarded speech, particularly in children who seem to be normal or superior in capacities other than speech. Basic visual memory capacity in deaf children is equal to that in hearing children (Furth, 1961). Under certain circumstances of learning, deaf children learn faster than hearing children of the same intelligence level (Putnam et al., 1962). The deaf child is at a disadvantage on words of higher or lower orders of generality or levels of abstraction (Hughes, 1961). The deaf child tends to be defective in clarity of articulation, especially in the use of front vowels (Mangan, 1961).

Inadequate or defective model and lack of being talked to will also rob a child of his model for imitation and of a motive for practice. Institutionalized children are conspicuously different in language development from children reared in good homes where there is ample language model. People who lisp, talk too fast, or stammer are unsatisfactory models for children in the early stages of language learning. Twins, or children very close together in age, sometimes provide each other with sign language or jargon which delays the acquisition of language. Twins, however, by 9 years of age seem to have gained enough language ability to overcome the disadvantage

of the preschool years. Only children, who receive much attention and hear much adult conversation, develop more rapidly in language than do other children. Many workers agree that the difference in language development between children of the "educated" or professional socioeconomic groups and children of the laboring groups is about eight months upon school entrance. This difference is, in part, a product of the amount and kind of language model these children hear and, in part, a difference in basic intelligence.

Sometimes retardation in language development is due to *emotional causes*. Too much urging to talk or too much praise or emphasis upon language success may place a too great premium upon learning to talk. Some children, sensing the importance of the accomplishment, become afraid to try. Ridicule, nagging or any other source of emotional tension concerning speech will prove sufficient to keep certain types of children from talking at all. Some children under such strain stutter.

Stuttering. There are two ages at which stuttering is conspicuous. The peak of the stuttering curve comes at about 2½ to 3 years of age. This is a time when children have enough vocabulary to discover the joy of communication through words. It is also a time when they are making rapid strides in social development and, in the urge to communicate, to attract attention and to tell things. Frequently, however, there are not enough words in the vocabulary to permit clear and facile expression, so the child in his eagerness stutters. Nearly all children between 2½ and 3 years, or at the stage of language development which this represents for the average child, stutter some. If this stuttering proves to be simply the repetition young children use sometimes until they can think of the next word needed, and if it is dealt with by gently giving him the word he is trying to think of, it usually disappears as his vocabulary grows and as he feels more sure of finding the right word. If the stuttering persists for some length of time, he should have help from a speech specialist.

A factor in stuttering at this learning stage may be disturbances in the auditory "feedback" mechanism. Stuttering at this and other developmental levels is frequently associated with stress in the child's life, sometimes consciously recognized, but more often not (Wingate, 1962). One writer identified maternal attitudes of rejection as a salient factor in certain cases of stuttering (Kinstler, 1961). In some societies (Japanese, for example) stuttering centers around the nature of the compliance demands upon the child (Lemert, 1962).

In discussing the treatment of stuttering, Bluemel (1960) says that the stutterer should be differentiated from the stammerer, the latter appearing to be a poorly integrated person, inwardly excitable, easily flustered and confused. The stammerer is one who makes involuntary stops and repetitions in speaking. The stutterer speaks with a spasmodic repetition of certain sounds, e.g., "t-t-too" or "c-c-cold." Bluemel emphasizes that therapy for stutters and stammerers should attempt to reorganize speech rather than to remove multiple symptoms of these disturbances.

At these stages of speech development and for these adjustment reasons, *stuttering is found in children everywhere.* A study in Helsinki, Finland, found 5½ to 7½ year old children who stutter to have trends toward rigidity, inhibition, and immaturity (Malmivaara and Kolho, 1962). A group of Bantu schoolchildren were compared to children of Western populations,

and no significant differences were found (Aron, 1962).

Johnson (1961) found that children in whom stuttering continues appear to have been subjected to somewhat more pressure than nonstutterers with respect to weaning from bottle to cup and also toilet training. Their mothers reported the use of coercive or punitive, rather than permissive or rewarding, methods of training. Parents of stutterers appeared to be somewhat more concerned than parents of nonstutterers about nonfluency of speech in their young children. He says that parental attitude toward the child's speech is more significant in the production of stuttering than any differences within the children themselves.

He concluded that there are three variables in the onset and development of stuttering: (1) the reaction of the listener, especially of the parent, to the child's nonfluency in language; (2) the child's degree of nonfluency as objectively determined; (3) the child's sensitivity to his own hesitation in speech and to the parental or other listener's attitude toward it.

We have seen a tendency toward stuttering at 2½ to 3 years. There is another developmental period when the tendency to stutter appears—a period of adjustment similar to the earlier period in the fact that children are again attempting to make an adjustment. This adjustment is to school entrance. In this instance, the trouble is often nervous strain resulting from the adjustments to new authority, to other children, to the routine of school. The nervous tension created may spill over into fingernail biting, a reversion to thumbsucking, a relapse in toilet habits or, frequently, into stuttering.

Some of the early primary school stuttering may be associated with handedness. Seth (1958) found that all of the 15 stammerers, ages 11 to 15 (controls used were 15 nonstammerers), he studied were ostensibly right-handed. However, their right-handed performances were markedly inferior to their own left-handed performances in the tests he used. Johnson (1961), however, found no significant group differences in handedness between his 246 stutterers and his 246 nonstutterers. Hutt and Gibby (1959) summarize the discussion about the influence of handedness on stuttering by commenting that some children who are converted to the use of the right hand after left-hand preference has been clearly established begin to stutter. However, such conversion does not result in stuttering in 90 to 95 per cent of the children.

The flare-up of stuttering upon school entrance usually dies down as the necessary adjustments are made. Teachers should investigate the cause and history of the stuttering of each of their stuttering children and should make every effort to correct any causes which can be corrected through the school. Great care should be taken not to force too timid children to recite or read before the group until they can be helped to develop the necessary self-confidence. Firmness of discipline seems necessary for certain children; but timid children should be handled gently. Stutterers, particularly, need great patience and understanding to help them to overcome the difficulty.

Aphasia. Aphasia is the loss or impairment of the power to use words and usually results from a brain lesion. Children suffering from this type of speech defect are usually retarded in some, but not all, aspects of visual-perceptive ability (Doehring, 1960).

Defects of Articulation. In a study of 752 first grade children who were defective in one or more of ten consonant sounds, it was found that articulation was more improved by speech therapy than by speech improvement materials, although both are important (Sommers et al., 1961).

READING: PART OF LANGUAGE GROWTH

The Reading Process. Reading is a simple process of associating printed words with their meaning; a process of getting meaning from printed material by putting meaning into it. It is a psychophysical process involving many interrelated factors of intelligence and linguistic ability, vision and speech, character and personality (Holmes, 1961). The study of the reading process should start with the organism, the child, the reader. Anatomical, physiological, psychological and social factors are involved. Visual and auditory structures determine, along with intellectual capacities, the child's potential for reading. His attitude toward himself, his level of aspiration, his social relations, his reading ability, his school success all exert an influence upon the individual's reading ability (Strang, 1961).

We have in Chapter 9 discussed Gibson's (1963) experiments with depth perception. She concluded that the jump from discrimination of depth-at-edge to discrimination of written or printed symbols is a big one—a jump that only human beings can make. In her work with graphic symbols it became clear that the stimuli provided by words and letters do not contain in themselves information that specifies unequivocally anything about the world. What they *do* specify can be found only in a code which varies from one language to another and therefore must be learned.

This involves at least two stages of development, the first stage being the discrimination of the graphic symbols themselves as unique items. A developmental process is involved in such discrimination. Gibson herself concluded that there is support for the view that there is perceptual learning of the distinctive features of letters in the stage of development before decoding the letters into speech sounds begins. This learning is a process of isolating and focusing upon those features of letters that are both variant and critical for rendering each one unique. Even before the child has learned this, he has learned to recognize speech sounds and to speak his language. Now he must accomplish the decoding of the written or printed symbol into the speech (language) sounds he already recognizes and uses.

Kagan et al. (1963) comment that children who are beginning to read are helped to early mastery if they have an analytical cognitive style which facilitates the differentiation and analysis of such hard-to-distinguish words as "cat" and "bat," or "dog" and "bag." These authors suggest that boys and girls differ in analytical and nonanalytical responses, the greater motoric impulsivity of boys being perhaps one of the primary antecedents of nonanalytical, undifferentiated conceptual products for boys. Gardner (1963) challenges this idea, saying that although the analytical response is abstract, it is not a superior level of abstraction and therefore does not explain the sex difference in ease of learning to read.

Reading: A Major Accomplishment of the Primary Grades. Probably the major all-around accomplishment of the primary grades is the teaching of adjustment to meeting authority, to contacting peers, to facing a routine job every day whether one feels like it or not, and other personal-social adjustments. The primary academic accomplishment of these grades is the teaching of reading. When the child learns to read we know that he has accomplished many preliminary learnings. He has learned mastery over eye muscles; he has developed basic discriminations in form or shape; he has mastered the abstractions of basic language, both in vocabularly and

"language sense"; he has learned self-control in a measure, as well as the personal-social adjustments to school mentioned above. In a sense, learning to read is a graduation from "the school of the before-school-learnings."

Readiness to Read. The period from 3 through 5 years is the period of great concern for words (Wann, 1962). Before children can profit from any given curriculum or method in reading, however, they must be what is known as "ready to read." The child's attitude toward reading is influenced by this readiness, part of which is dependent upon such traits as curiosity, a factor that is associated with the child's ability to comprehend the meaning of sentences in reading materials better than the child who is low in curiosity (Maw, 1962). Readiness to develop skills in reading is developed through *all the child's experiences*; speaking, listening and field trips all pave the way for reading. Equally important with experiences about which the child can communicate is the significance of *extensive vocabulary development*, so that the child can bring an adequate spoken vocabulary to the task of interpreting the abstract symbols which "stand for" these experiences and words (Wann et al., 1962).

Groff (1962) calls attention to the fact that the child's attitude toward reading as a school activity has an important effect upon his comprehension of what he reads and is a factor in his success in the reading activity.

Hymes (1958) discourages attempts to *build* readiness to read into children at the prereading stage by means of drill and structured exercises. Rather, he encourages using the readiness children already have, namely, a readiness to discover the how and why of community activities, and to enjoy stories. Hymes points out that children who have not yet started to read have nevertheless been using words and thinking for a long time and are more likely to be bored than motivated by sterile simplicity in verbal matters. He adds that "readiness will not blow away" but "grows deeper and stronger with time and good living."

Reading Adjustment and Success in School. In the primary grades reading permeates almost every aspect of school progress. (Success with numbers is also of great importance.) Success in reading (or failure with it) often sets the pattern of total achievement that is relatively enduring throughout the following years (Gaines and Allinsmith, 1961).

In teaching children to read the schools use visual, visual-auditory, visual-verbal, and meaning association, reinforcement by means of knowledge of success and results, by social approval, and by transfer of reading contexts. All of these methods produce faster learning than do the "traditional" methods (McCreary, 1963). One study of interclass groupings based on reading skills in the fourth, fifth and sixth grades produced significantly improved reading gains during the school year (Green et al., 1963). All schools attempt to teach children not only how to read but to love reading as well. (See Figure 74, *A*, *B*, *C* and *D*.)

READING DISABILITY. This may sometimes be associated with brain damage resulting from encephalitis. It may also be associated with prematurity of birth, an unusually high proportion of prematurely born children (being subject to the hazard of brain damage) having been found to have reading difficulties (Alm, 1953). One study related reading disability to maternal disturbances in the prenatal and paranatal periods (Kawi and Pasamanick, 1959). Home influences, partly mediated through speech, were found in a study at the University of Manchester, England, to contribute to

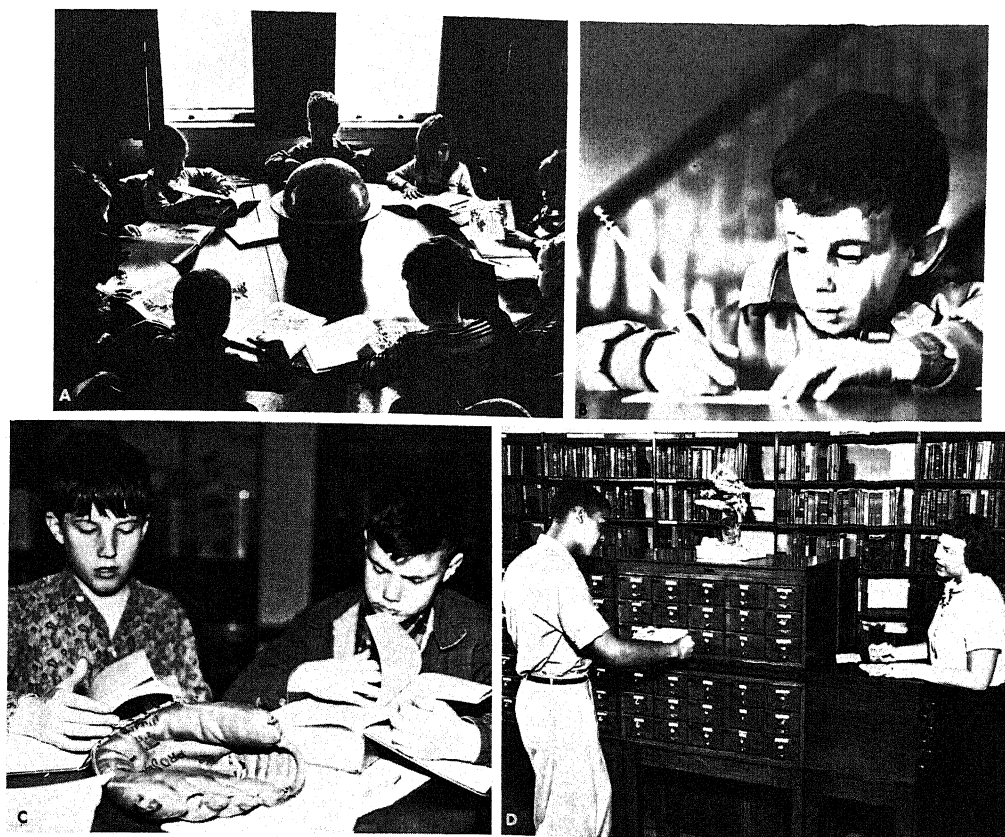



FIGURE 74. *A*, Learning to enjoy books at school. *B*, A 6 year old applies for his first library card. *C*, When a child has learned to use the library, books come to have a place among the day's activities. *D*, In junior high school the library has become a routine supplement to schoolwork. (Courtesy Georgia Latwick, 1964.)

skill and to disability in reading, but personal maladjustment, although sometimes associated with failure and underfunctioning, was not incompatible with success in reading (Sampson, 1962).

Retarded readers need an incentive in relatively difficult learning situations. Unless highly motivated they tend to be less attentive to classroom stimuli, which leads to difficulties in symbolic learning of all kinds (Walters and Kosowski, 1963).

Development of Reading Interests. As anyone who has observed children knows, those who are less than 5 years old love to have stories told or read to them and are delighted with rhymes and jingles. Animal and nature stories, especially those which involve imaginary conversation with or by animals, have a strong appeal. Interest in simple here-and-now stores of everyday affairs like the day's routine, the travels of the fire engine or the milkman reflect the child's interest in his own routine life and the things in his immediate environment.

With a widening of the child's social and intellectual experiences his horizon of interest widens. As a rule, children in the primary grades are still interested mainly in local environment; accounts of toys and games, of

pets (conversational animals who live a family life or go on adventures still dominate in popularity) and homes and parents, and, reflecting the great new interest of their lives, the affairs of the school. This range of interests includes holiday stories around any given holiday time. Dramatizations of stories read for holiday celebrations help to clarify and fix knowledge, e.g., the landing of the Pilgrims. Any stories of other children like themselves, who live as they do, are of great interest. Interest in Indians develops here, partly because many children have seen Westerns on TV or visited some part of the country which is rich in Indian lore. Interest in less dramatic or primitive groups is, however, delayed as a rule until later.

As we saw in Chapter 6, interest in "comics" begins almost as soon as children can read. Some primary teachers are competing with this interest by using other parts of newspapers as a means of increasing vocabulary. The headlines and large print are brought to the classroom and the children pick out the words they know. This appeals to their feeling of being grown up and doing as their parents do. It proves a good means of practice in word identification and is an excellent background for interest in current events in the later grades. Some elementary schools make use of "Weekly Readers," miniature newspapers with many pictures and text designed to fit the interest of each age level. Subscriptions may even be continued over the summer months. The Readers are mailed to the child's home, giving him the prestige of receiving personal mail and providing him with an opportunity to practice reading skills learned during the school months.

Pupils of the middle grades want to branch out in their reading interests. Grier and Collier (1960) found that boys (average age 10 years) and girls (ages 8 and 9 years) in America and in Finland appeared to have no one generally popular story, but there was a generally preferred kind of story. In both countries both boys and girls preferred stories in the fiction categories over fairy tales, information, biography, animal, or religious stories. They all liked particularly stories about travel and about exciting, dangerous pursuit and escape; stories the interest of which was heightened by particular characters, illustrations or style; and stories about social situations involving subterfuge and surprise, or humor and comical enjoyment, in about that order. These authors conclude that these similarities in reading taste, not only between the sexes but cross culturally, bear out the psychoanalytic assumptions that the latency-stage child turns his attention to all kinds of learning, including that about people, places and social interrelationships. Children, as individuals, differ in their reactions to books, as we see in Figure 75, *A*, *B*, *C* and *D*.

Winick (1962) found that the largest selling teen-age magazine is Boys' Life, sponsored by the Boy Scouts. Other magazines frequently read are: Dig, Flip, Hep Cats, Modern Teen, Seventeen, Sixteen, Datebook, Teen Parade, Teens Today and Teen World. This author refers to rock-and-roll as "a socializing force" (among teen-agers) because it is one of the elements of the teen-ager's life that is indigenous and not shared by adults.

Interests at all levels are conspicuous for variety. They change clearly from one level of development to the next, but the interests of one level merge into those of the next and vary with sex, mental age, background of experience, availability of interesting reading material, and home influence. Unless children are given guidance they adopt narrow interests in reading and fail to enlarge their experiences through reading. On the other hand,

view. Any thinking involving an analysis of *cause and effect* relationships may be classified as reasoning. This does not, of course, mean such conditioned associations as muscle jerk responses to bells which are rung. It does mean, however, any intellectual process which marshals facts or experiences into orderly sequences. Such a comment as "Mother, why does the drinking fountain choke?" made by a 3 year old who thought the fountain was coughing because it gurgled, shows an association between choking and coughing and an application of this knowledge to a concrete, present situation. Another 3 year old observed that a person who had gray eyes must be old. One 2½ year old had hurt her neck. A playful older child suggested that she blow on it to relieve the smarting. She replied, "I can't. It's behind." In a less verbal way we see a 2 year old relating cause and effect when, in running with harness dangling, the harness is caught in a snag. He stops, tugs, discovers the cause, backs up, and releases the harness.

Whenever two variables vary together, it is easy to conclude that one causes the other. We see an example of this in a 4 year old who sees trees waving as the wind blows and concludes, "Trees waving make the wind blow." Constant training in accurate analysis of cause and effect relations is, as it should be, a major concern of schools. Science courses carry a particular responsibility for this training. But homes and nursery schools should also recognize this thinking process in its beginnings and plan a definite program which will give accurate knowledge and real practice in such thinking.

GENERALIZATION AND DEDUCTION. These are parts of another important type of reasoning, the same in some ways as relating cause and effect, but involving wider conclusions and an ability to apply principles when needed. Although children seem somewhat slow in accumulating a wide enough background of experience from which to draw general conclusions, we see the process in action in 4 year olds in the following instance: At a school which promotes children into kindergarten on their fifth birthdays John, age 4, said to Carrol, also age 4, "I'm 5." Carrol replied, "No, you're not. If you were you wouldn't be in this school."

We also see it when Eddie, age 3, says to Ralph, age 4, "When I'm 5 I'll be older than you"; whereupon Ralph answers, "No. Next Christmas you'll be 4, and next Christmas I'll be 5. I'll always be older than you."

However, among young children, as among adults, we see many false conclusions. One 5 year old thought standing in the rain would make him grown because it makes plants grow. Another thought men were filled with sawdust because dolls were. Charlotte, age 4, was overheard saying one day, "My birthday will come when it snows." A few days later the teacher said, "Look, children, it's snowing." Charlotte said, "Then, when I get home I'll have a birthday."

In a Girl Scout Program study the question was asked: "What do you think your organization stands for?" Seven to 13 year olds answered in terms of specifics: "We learn things"; "We have fun"; "We learn how to make and keep friends"; "We meet kids from other countries"; "We learn to become better persons." This progression came from the 7 year olds up through 13 year olds, the latter type of generalization coming only from the 12 and 13 year olds. The 14 to 17 year olds offered broader generalizations: "We learn about international relations"; "We broaden our experiences"; "We become more mature in outlook."

A practical difficulty met by school-

teachers in teaching generalizations is to get children to apply names accurately. One kindergarten teacher, in trying to teach the concept of squareness and roundness, always presented blue squares and red circles. She found several of the children associating the two together, thinking that all squares were blue and all circles red. We find some children, and adults too, concluding that all people of a particular nationality are fine people because the only one they know is fine, and that all people of another national extraction are bad because one person they know of that extraction is bad. Such jumping to conclusions represents faulty reasoning. Children should be encouraged and helped to delay judgment a reasonable length of time, or to hold judgments in suspense, ready for change if further experience proves the first judgment wrong.

PROBLEM SOLVING. This form of thinking is most generally agreed upon as a type of reasoning. Any use of past experience, of presently available tools, of skills and habits to solve a practical or a theoretical problem is the form of thinking that differentiates man from the animals. It is in this area that children can be seen to reason most clearly. The year old child, pulling the tablecloth toward him to get something, is using cause and effect to solve a present problem. Bobby, age 3, who wants to go down the slide backward as he has seen other children do, finds that he cannot turn himself around on the top step. So he descends, turns himself around, and manages to ascend the steps backward in order to be in position at the top. He has solved a problem. Such problems are not solved in words; they are solved in action. Use of language as a tool in reasoning and problem solving is one of the last uses made, as has been said earlier. It is because children do not ordinarily solve problems in words, and because they do not generalize readily or apply principles concretely, that many people discredit their reasoning power.

Not every writer accepts these simple action solutions of problems as examples of reasoning, reserving the term "reasoning" for solutions of problems involving abstractions. Piaget, as we saw in Chapter 9, analyzes different kinds of reasoning as they are related to each other and as they develop in children. Only gradually, he feels, does the child broaden his intellectual horizons so that he has background for greater abstractions and more complex forms of reasoning.

Importance to Adults. It matters a good deal in practical dealing with children whether we believe them capable of some reasoning of whether, believing them to be incapable, we assume that they can learn only by physically conditioned responses. If we believe the latter, we tend to make discipline physical, immediate and concrete. If, however, we believe that children do reason, no matter how primitively, we tend to teach by natural consequences, by pointing out sequences of events, and by helping children to draw conclusions and to solve their own problems.

General recommendations in child training parallel the findings in child development research. It is generally recommended that discipline for children less than 2 years of age should be concrete, quickly following the situation needing discipline, and not accompanied by too much talk. After 2, however, as the child acquires language facility and some reasoning capacity, the recommendations are in the direction of less and less physical or concrete punishment, more and more in the direction of "consequences of action" and helping children to discover for themselves the results of good or bad behavior, talking

or "reasoning" coming to have a place. During the 2 to 5 year period, parents and educators are urged to make increasing use of concrete situations as a basis for generalization, and to augment constantly the situations in which the child is encouraged to meet issues and solve problems for himself. Simple verbalization helps. For example, such sequences as: come in from play, wash, eat, must be repeated over a long period before a child will form the automatic habit. He will "get the idea" and form the habit much faster if he is helped by having it pointed out that "we wash after playing so that we can have clean hands when we eat."

Although a program of "natural-consequences-of-the-act" is recommended, care must be taken to see that no child is forced to make decisions or solve problems which are too complex or in which the consequences of a mistake are too serious. If this happens, he may become discouraged or frightened away from decisions and independent problem solving. Even for the 6 to 12 year old child much learning is not a consciously thought-out process. It is, rather, a casual by-product of concrete experience, an incidental activity in a world of factual living. Although the elementary school age is above all a period of rapid learning, most learning still takes place through conditioning, through chance observations, through the random experimentation which is called "trial and error," and through imitation of others. Only the more "intellectual" children learn before adolescence by intention to learn rather than by chance or by adult motivation. In spite of this, however, all authorities agree that children of upper elementary school age show rapid progress in capacity to generalize and to make deductions. They become increasingly able to draw conclusions from fewer and less concrete situations than are necessary in teaching preschool and primary, or lower elementary school children. They learn fairly rapidly how to apply rules to specific situations, and they become more skillful in solving problems in the mind as contrasted to the necessity for solving them in concrete reality as younger children must.

A careful analysis of the available data leads to the conclusion that mental growth, especially growth of the power to reason, continues to the end of the teens or, under stimulating conditions, even longer (Horrocks, 1951).

Largely because of increasing experience and better reasoning power, an individual at 25 or 30 has more mental ability than he had at 20; he reasons better on complex problems; he manages himself and his affairs more efficiently; he adjusts to increased complexity in his life situation. Similarly, if mental growth is not cut off, the man of 35 or 40 manages his affairs better than the man of 30.

Individual Differences. We must recall individual differences here again. There are not only the children whose general mental level is low and, hence, who cannot learn intellectual material; there is also among children of the same general IQ level a fairly wide range of memory capacity and ability to understand. Some seem "mechanical-minded," being capable in the area of handling things; some seem "verbal-minded," having better ability with words than with things; some seem dominantly "social-minded," having their greatest ability in responsiveness to people and in clear judgment about themselves as people. The typically feeble-minded child, however, is low in all intellectual capacities, having short attention span, poor understanding of factual or of personal relationships and poor autocriticism; and he is limited in his use of general experience. Gifted

children, on the other hand, are facile in all these areas.

EXPERIENCES TO VITALIZE CLASSWORK

1. Visit a first grade class. Select some child who is retarded in language development. What is responsible for his difficulty? Outline a practical plan for helping him if you were his teacher.

2. Visit an upper elementary grade. What language experiences are the children having? Would you judge these experiences to be didactic and meaningless or alive and meaningful? Is there any plan for individualizing instruction? If not, could you make a practical one?

3. Do you feel that your own reading interests, and the amount of reading you did, slumped from the junior high school through the senior high school? How usual do you feel your own experience to be? How adequate are your own speed and comprehension in reading? What, if anything, can you do about them?

4. Do you have any plan for extending your own active vocabulary? for improving your own diction and use of grammar? What would you consider the advantages of such improvement?

5. Are the elementary and secondary schools which you know encouraging or discouraging reasoning power in children? What has progressive education contributed to the improvement of the teaching of reasoning?

6. How can a parent help a child to reason accurately? Did the discipline your parents used on you improve or discourage your reasoning capacity? Where and how did you develop such reasoning capacity as you have?

SELECTED READINGS

Church, J.: Language and the Discovery of Reality. New York, Random House, 1961. Chapters 1, 6 and 7.

Crow, L. D., and Crow, A.: Readings in Child and Adolescent Psychology. New York, David McKay Company, Inc., 1961. Chapter IX (49), A Survey of Attitudes, Opinions, and Objectives of High School Students, pp. 278-282; Chapter 17, How to Encourage Language Development; Chapter 18; If a Child Stammers.

Kiell, N.: The Universal Experience of Adolescence. New York, International Universities Press, 1964. Chapter X, The Compulsion to Read; Chapter XII, The Uses of Language.

Morley, M. E.: The Development and Disorders of Speech in Childhood. Baltimore, The Williams & Wilkins Co., 1957.

Wann, K. D., Dorn, M. S., and Liddle, E. A.: Fostering Intellectual Development in Young Children. New York, Teachers College, Columbia University Press, 1962. Chapter II, Children Have Ways of Understanding Their World; Chapter III, Children Want to Understand the World Beyond the Here and Now.

12

SOCIAL AND PERSONALITY DEVELOPMENT

General Personality Trends

PERSONALITY

Children grow socially as they grow physically, from year to year developing greater complexity of social behavior, greater skills in getting along with people, and greater self-control. As in the discussion of every other type of growth, it should be realized that, although we discuss stages or steps in this growth, it would be a serious mistake to assume that these steps proceed in the same order or during the same years of age for all children. Social and personality development is an orderly process in each child, but it does not follow the same precise pattern from child to child. We have already discussed "fast" growers and "slow" growers as children whose growth varies from the average. In physical and in mental growth we see all kinds of variation in tempo of growth and hence in physical and mental maturity of children of any given age or of any school grade level. These differences are equally wide in social and personality growth. They are probably even wider in personality development which is, if we can judge from the evidence now available, even more responsive to the amount and quality of experience to which the individual has been exposed.

Definition. The lay person's conception of personality as that which makes one popular with people is not the psychologist's conception. The

psychologist thinks also of the dominating, destructive attitudes of a gagster, or the blank emptiness of an idiot, as making up part of the complex of feelings, attitudes and behavior which is personality. Berlson and Steiner (1964) refer to the process of socialization, and define it as "the training or molding by which an individual is made a member of a particular society, i.e., how the infant becomes a child, the child an adult. The human behavior involved in this process is far more variable, and therefore less predictable than that of any other species." Bobroff (1960) describes personality as "a blend of these three components: predispositional temperament, an accumulation of emotional and cognitive experiences, and genetic maturity."

Ausubel (1958) says that the terms *self, self-concept, ego* and *personality* constitute, in the order given, an ascending hierarchy of complexity and inclusiveness. "The *self* is a constellation of individual perceptions and memories consisting of the visual image of the appearance of one's body, the auditory image of the sound of one's name, images of kinaesthetic sensations and visceral tension, memories of personal events, etc. The *self-concept,* on the other hand, is an abstraction of the essential and distinguishing characteristics of the self that differentiate an individual's 'selfhood' from the environment and from other selves. In the course of development, various evaluative attitudes, values, aspirations, motives and obligations become associated with the self-concept. The organized system of interrelated self-attitudes, self-motives and self-values that result may be called the *ego. . . . Personality* is a still more inclusive term than ego. It includes *all* of the behavioral predispositions characteristic of the individual at a given moment in his life history."

Studies of Personality and Social Growth. There is a substantial body of research material on studies of personality and social growth. Many of these studies are based upon direct observation of the behavior of children who were placed in controlled experimental situations and detailed stenographic records of behavior taken. Others depend upon ratings of traits or behavior on check lists carefully worked out to cover the total range of possible behavior. These ratings may be checked or recorded by specially trained experimenters, or by teachers who know the children well, often by both; they involve ratings of children in free play or work situations. Authors are not agreed as to how accurate such ratings are in portraying real personality. Other studies are based upon stenographic reports of everything a given child does or says in given half-hour or longer periods. An analysis of these records may be used to classify social contacts, play activities, content of conversation, and the like. Some workers, notably the psychoanalytic group, feel that overt, or observable, behavior of children does not tell enough of the story of emotional reaction or inner feeling in social situations but that unconscious factors must also be considered.

PERSONALITY "TESTS." In the late 1950's and continuing into the 1960's many attempts have been made to assess and to evaluate personality or phases of personality. Such "tests" as the Minnesota Multiphasic Personality Inventory (MMPI), the Manifest Anxiety Scale (MAS) and the California Test of Personality (CTP) are used widely.

The present trend in studies of social behavior and personality growth seems to be in the direction of attempts to understand the total personality structure and function as a background for specific behavior reactions, and in the direction of studies of the

total interaction between individuals and groups or between the individual and the total situation, both past and present, in which he finds himself at the moment of any given behavior.

One of the most widely used current methods for the study of social behavior in relation to the total personality is the study of children's emotions and attitudes through the "projective method," which was referred to, with a number of "projective" tests listed, in Chapter 3.

In summarizing present available research on social and personality growth, Murphy (1956) concludes that, although in agricultural experiments one may try out different soils for growing different plants, children are more subtle; in fact, they are so complicated that a generation of intensive research has failed to produce definite laws of the soil-rain-sun level of simplicity. As for defining laws regarding the kind of social behavior to expect from different types of children under different conditions, we have as yet made only a beginning.

Exactly how personality develops as a product of the interaction between the impulses and needs of the individual and the play of his environment upon him needs much study. We do not yet know how parental influence can be made to stand against peer group influence, or when it should. We do not know as much as we should about how to produce or to control aggressiveness, or how much of it is desirable at the various stages of development. We are only beginning to understand the influence of physical vigor upon personality functioning, or the effect of the various grades of intellect. We have made good beginnings in investigations into the effect of cultural or community demands upon personal and social development, and in the effect of routine demands and of creative opportunity upon the unfolding of native capacity.

Personality and Character. Personality is closely related to character in its entire range from amorality to the most mature form of ethical behavior. Peck and Havighurst (1960), in a study of the psychology of character formation, list the following personality factors in character:

1. Moral stability: The tendency to follow the established moral code, willingly and with genuine satisfaction.
2. Ego strength: A complex of capacities to react to events with accurate perceptions, appropriate emotions, and insightful, rational judgment.
3. Superego strength: The degree to which behavior is directed by, or in accord with, a set of internalized moral principles—a conscience.
4. Spontaneity: The tendency to express feelings and wishes directly in action.
5. Friendliness: A generalized attitude of warm liking for other people. (The polar opposite of this is hostility.)
6. Hostility–Guilt Complex: A complex of intense feelings of hostility, linked with strong feelings of guilt about inner impulses.

HOW PERSONALITY DEVELOPS

A Dynamic Entity. Landis (1952) says: "Personality is dynamic, a growing entity. Physiologically it is vested with the capacity for maturation. Except as mutilated by environment, physical traits follow their predestined course from childhood to maturity. Psychologically, it is plastic, capable of an infinite number of modifications by external stimuli. Sociologically, it is dependent on the group to provide the patterns of development, for human nature is a group product."

One classical study of detailed life histories of twenty-five college-trained women indicates that, although some personality traits in any given person change as the individual passes through certain kinds of experiences, each personality preserves a central stability, a central core or focus or

"center of gravity" which does not change (Roberts and Fleming, 1943).

Constitutional differences affect how any given child will react to experience. The active, self-assertive child, for example, reacts to parental attitudes and treatment differently from the phlegmatic, submissive child. Thus, personality within each child has an individual pattern which is continuous as his personality structure develops. Some personalities are far more flexible than others and change radically under sharp changes of environment; others have a "granite-like quality which withstands the impact" of even the most radical changes of environment. But all personalities have a "center of gravity" which lends stability to the personality in the sense that it preserves a balance of traits within that personality. You are who you are, in other words, because of the unique quality and balance of your own particular personality.

A study of the stability of passive and dependent behavior for childhood through adulthood for 54 subjects from the Fels Research Institute's longitudinal population showed passivity and dependency to be moderately stable in women, but not in men. It was suggested that dependent behavior was punished more consistently in boys than in girls and that this punishment led to conflict over dependency in the growing male and, hence, decreased stability over time (Kagan et al., 1960).

In spite of the individuality of organization of personality which tends to endure throughout life, individual traits do change. Personality is more fluid or subject to change through influence of the environment than is physique or even intelligence. The center of gravity, or core around which organization of traits takes place, is made up of a set of habits and attitudes which are essentially fixed early in life, but which may be added to and modified by the experience of the individual. The greater inflexibility of the older personality is probably due to a larger and more fixed core of personal habits and attitudes which, like any habit, no matter how fixed, can be changed if sufficient emotional shock or continuous and strong enough pressure is brought to bear upon it.

However, it would be disastrous to jump quickly from this to the conclusion that we can, by enough nagging or punishment, change people, particularly adults, to suit our liking. The very stability of a central core of personality around which habits and attitudes achieve a working balance in any given personality proves to be the reason we cannot, or should not try to, make over basic traits in any personality unless we have the help of highly trained specialists. Psychiatrists or clinical psychologists are the specialists who should be consulted if a basic change in any given personality seems required for a reasonably good working adjustment to life situations. To change any basic trait without due regard for the other traits, habits and attitudes which balance this trait may be to invite disaster through a serious disturbance in the total personality balance.

The Influence of Environment and Training. However, the training and forming of the personality of young children is quite another matter. There are many studies which show the influence of environment and training upon the formation of young personalities (Engel, 1962).

Stone and Church (1957) say that the child first perceives only emotional significances; not until later does he perceive qualities of objects. Among his first emotional responses are those to the persons who take care of him. He associates the satisfaction of basic needs with the specific person who satisfies them. Early in the developmental pattern also are the infant's

responses to a smiling as versus a cross face and tone of voice. He reacts to the emotional meaning of these before he can distinguish objective details. Thomas et al. (1964) studied 130 children from birth through the first two years and concluded that differences in the temperament of children cannot be attributed exclusively to environmental factors. Temperamental characteristics which are already present in the first few months of life make a fundamental contribution to psychological individuality, and personality development is the result of the interaction between these characteristics and an environmental complex.

Thus, it is possible to see something of the influence upon the child's personality of the parental attitudes discussed in Chapter 5. On the other hand, as we have seen earlier, the individuality of the infant, as expressed in his personality, in turn engenders certain reactions and possible changes in parental attitudes and behavior.

Sontag et al. (1958) have provided results of extensive investigations of the development of personality from infancy through adolescence. Cattell and Coan (1957) have summarized such studies and have investigated eight sections of first and second graders, using parental ratings of the children. They conclude that personality structure in young children does not appear to be noticeably less complex in the number of primary factors involved than is the personality structure of adults. There are, however, certain "habit collections" which appear in early and middle childhood and which are the result of inner potential as influenced by environment and training. We shall discuss some of these later.

The Freeing of Personality Potential. Jack (1934) studied the dominant behavior of individual children in groups. She selected a group of 4 year old children in the Iowa Child Welfare Research Laboratories, pairing each child serially with ten others and observing on a carefully worked out scale how much each child dominated or was dominated by the others in the experimental situation. She discovered that the chief difference between the ascendant and the nonascendant child was a difference in the degree of self-confidence each felt in the given situation. Proceeding on this, Dr. Jack trained each nonascendant child in three different things which the other children did not know, such as assembling a mosaic of blocks or learning to know a storybook. Armed with these skills the nonascendant children were again paired with each of the ten children of the original test situation. Only one child (and he had a serious speech defect) failed to increase his ascendancy score decidedly. These children did not always succeed in dominating originally strongly dominating children, but they greatly increased their attempts to do so. Stoddard (1959) comments on this study of ascendant behavior: "The important finding was that the trait of ascendancy can be changed markedly by exposure to play situations that involve the building up (or breaking down) of confidence. The potential bully could be tamed, the 'milquetoast' toughened up."

Achievement in physical skills such as stunting on the jungle gym (Fig. 76), or jumping rope (Fig. 77), not only aids self-confidence through control of the body but also releases energies in fun-giving activities and provides bases for contacts with other children.

Parents and teachers can, through specific training, help children to gain self-confidence in at least some areas. This, in turn, can be utilized by the children to improve their leadership possibilities with other children. The effects of such training are cumulative.

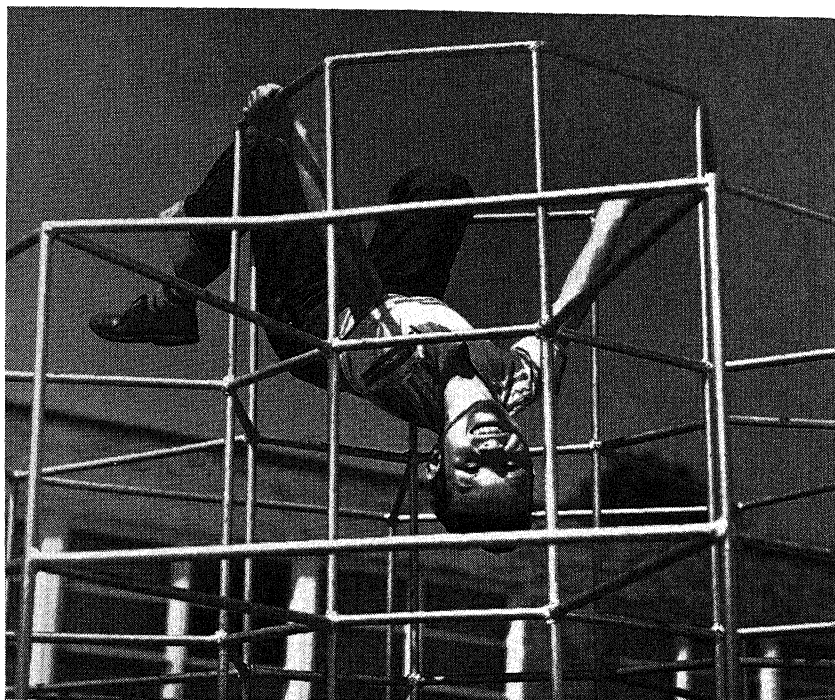



FIGURE 76. Body control engenders self-confidence. (Courtesy of H. Armstrong Roberts.)

A child, once finding some confidence with other children in one skill or ability, is encouraged to try others and can be led on into more and more ascendant behavior. It is not wise as a playground teacher, however, to force the shy and unskillful boy into a baseball game where his lack of skill only makes him a nuisance, with the result that the group avoids him still further. Much better is a plan which takes the child off in private where he can be taught to throw, catch, hit and run, so that he can take a desired place in the game. If he is hopeless as a ball player, he may become a good marble shooter, swimmer and diver, track man, singer in or accompanist for the glee club.

Children differ in leadership or dominance qualities at least somewhat in terms of the skills they possess in the natural world of childhood and which they acquired without special teaching with an eye to making them leaders. As a result, their leadership-followership position is ordinarily determined by the successful use of these "natural" skills measured in terms of the skills and interests of the particular group of children with whom they find themselves working or playing.

Modification of a Sense of Failure. One recent study has given us some further insight into how to modify a sense of failure (Gelbert, 1962). Children in a preschool setting were observed in paired interaction while playing in a series of 20-minute sessions, and studied for dominance reactions. It was found that varying the identity of the playmate tended significantly to decrease the stability of a child's dominance patterns. This was particularly apparent when the individual child's playmate proved to be the less assertive of the two, in which case the more assertive child

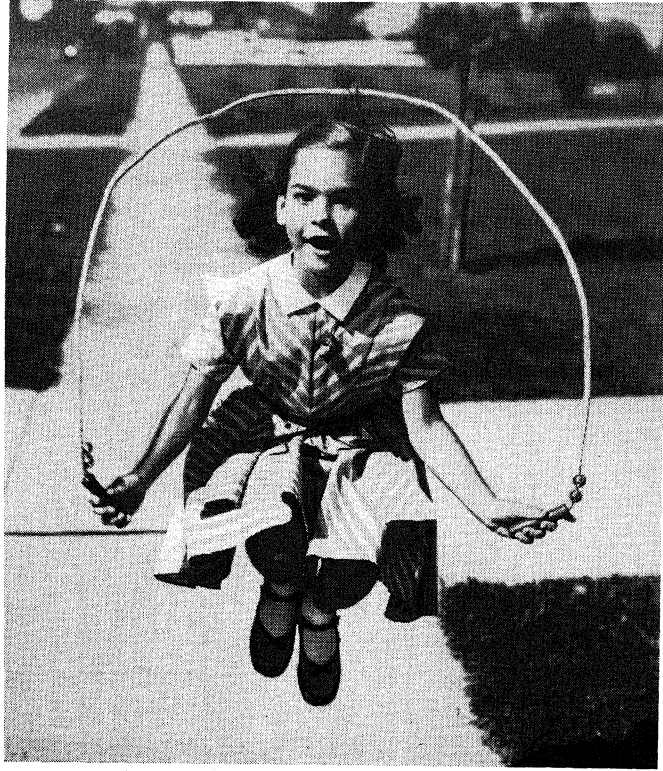



FIGURE 77. Physical skills free the personality. (Courtesy of H. Armstrong Roberts.)

displayed more dominance than when playing with a more assertive child.

This recalls a classical experiment done by Updegraff and Keister (1937), who demonstrated that children's reaction to failure can be changed favorably. They selected by means of special tests children who showed undesirable or immature reactions to failure. Immature responses were "giving up," requesting help more than half the time, destructive behavior, more than two rationalizations in the test situation, exaggerated responses. These children were subjected to training periods in which (1) tasks presented were graded in difficulty so that the child's first experiences were successful and the later ones were within the possibility of success but required increasing effort and perseverance, and (2) tasks were so chosen that the child could see his progress and previous successes. Children so trained showed "remarkable improvement." They ceased to sulk and cry; interest and effort increased significantly; dependence on adults decreased; violently emotional behavior was eliminated.

This experiment followed the lines recommended by the best clinicians. Children who react badly to failure must be helped to see that crying, destruction, and other emotional behavior does not help. The only good way to show them this is not to punish them for such behavior but rather to teach them how to get better results. This involves going back to the level of performance where success is possible, that is, "taking the child where he is," and teaching him through increasingly difficult successes how to persevere and win, "leading him where you want him to go." This is an

FIGURE 78. Encouragement of poise through group discussion. (Courtesy Los Angeles Public Schools.)

especially effective technique for teaching constructive attack upon problems when children are young and their habits of approaching things are in the making.

The Los Angeles schools encourage the development of confidence through group discussion (Fig. 78), and through group participation (Fig. 79).

FIGURE 79. Encouragement of poise through participation. (Courtesy Los Angeles Public Schools.)

There are indications that the older the child the less subject he is to training in such group techniques. The reason for this may be that, as the years go by and as he has increasing experience in being dominated by others, he accumulates increasing conviction that he is a nonascendant person and has an increasing lack of self-confidence. Then, too, as the years go by, competition for a place in the group becomes harder because the other children are accumulating keener and keener skills, not only in sports or songs or other activities, but also in actual social awareness of what to expect from people and how to get along with them. It becomes increasingly difficult for the nonpracticed child to catch up to the point where he can compete on favorable terms with the practiced children. Dominance and submission seem to be fairly fixed personality traits by the time the individual reaches young adulthood.

Dominance Patterns. Like many traits, the dominance pattern varies with the situation, some people being dominant at home but thoroughly dominated at work, or vice versa. In general, adolescents from higher socioeconomic levels are found to be more dominant than those from lower socioeconomic levels. As with younger children, adolescents who tend toward dominant behavior have a larger repertory of skills and abilities than do the nondominant; children who have exceptionally good bodily skills tend to be especially dominant. College athletes show a higher interest range and are more dominant than nonathletes (Booth, 1958). This seems to be general among young people especially skilled in body control. This probably does not mean that physical training produces dominance but rather that, as Maslow (1954) found, the naturally dominant feel free and can express themselves well through bodily action. Doubtless there is an interaction between the two factors, the naturally (or early-acquired) dominant children being free to express themselves in bodily movement, getting practice, becoming more skillful, and more self-confident, and so on around the circle.

Thus, although the emotional disorganization and ego deflation attendant upon failure can be changed in young children, and although the dominance position in a group can also be changed in young children, evidence indicates that such changes are harder to effect in older children and young adults in whom the personality seems to be more structuralized and the ego level more static.

Personality Change as a Result of Crises. Peripheral traits in personality, and occasionally even core traits, are sometimes changed even in adults by such life crises as loss of a beloved person, the birth of a child, the sharp impact of quick success, and other similar situations. The effect of these crises will depend somewhat upon the stage of growth the individual is in when the crisis arises, since certain events assume more critical significance at certain specific periods in the life of the individual than similar incidents at some other point in time (Mussen and Conger, 1963).

We have a tendency to protect children from trouble, struggle and tragedies which we feel to be stunting to their growth. Yet struggle and adversity sometimes strengthen personality. Overprotection of children may seriously stunt their personality growth. By facing and coping with difficult situations which are within their developmental abilities to meet, children can learn something about handling hard and unpleasant things. A life made up only of pleasure and ease does not allow for practice in developing a life of poise in the face of trouble. Until the child has met difficulty successfully he cannot have the confi-

dence to cope with or know the thrill of success after uphill work. Too often progressive educators and superconscientious parents protect children from effort, with the result that they do not learn to work; and shield them from failure, with the result that they have no practice in meeting failure or confidence that they can do so. Children need to learn how to fail successfully, and how to succeed without "losing" their heads.

The Influence of Social Expectation. How important the influence of social expectation is upon social and personality growth can be seen in the work of Mead (1935), who observed the development of character and personality in a number of primitive tribes. She reported that the development even of such so-called "sex traits" as greater aggressiveness on the part of the male and of submissiveness on the part of the female were apparently a product of the culture more than of the innate sexing. This is somewhat at variance with the work of certain biologists who have observed changes in aggressiveness or submissiveness with removal or implantation of testicular or of ovarian tissue in animals, the testicular tissue seeming to increase aggressiveness, the ovarian tissue seeming to increase submissiveness. Mead observed among Arapesh men a cooperativeness, gentleness, unaggressiveness, and solicitousness which were characteristic also of their women. On the other hand, she observed among Mundugumur women the violent, aggressive, competitive, and hostile behavior characteristic of their men. Our idea of sex roles was reversed among the Tchambuli men and women. In this tribe the women were powerful and did the fishing and the making of the most important articles of trade; the men engaged in artistic, nonutilitarian activities. Their women were practical and efficient and adopted an attitude of tolerance toward the men, who were timid, sensitive, dependent and graceful. Any person of either sex who differed from the established pattern of behavior for each sex in any of these tribes was considered a sexual deviant. Mead concluded that such standardized personality differences as are found between the sexes are the product of the cultural patterns and expectations in which the individual matures.

The important thing to consider in discussing the impact of the culture upon the development of the individual is not so much the exact pattern of behavior set by the group but rather the relation between those patterns and the possible achievement of them by the individual. For example, as we saw in Chapter 5, the early days of American development placed great emphasis upon the large-framed, muscular and aggressive man. So fixed was this as the pattern for boys that hypersensitive boys who loved beauty and hated fighting were in the unhappy position of complete inability to achieve status in the eyes of the group and, as a result, were unable to marry any but masterful women who found fulfillment in the control of a mate instead of in the feminine pattern of leaning on one. Such a man often lived a miserable life. In eighteenth century Europe, however, a "gentleman" could dress in elaborate velvets and laces and sniff his snuff with a dainty curve of the little finger. These patterns vary in marked form from period to period. But they also exist within any period, differing from family to family.

Racial Acceptance in Young Children. In a study of children in a racially segregated city, Morland (1958) found that white children in such a segregated situation were able to distinguish between Negroes and whites at a significantly earlier age than could Negro children. Earlier studies made in the integrated schools

of Massachusetts had found that Negro children became aware of racial differences at an earlier age than white children (Goodman, 1952; Horowitz, 1939). Other studies have reported similar results in a way that implied that Negro children all over the United States become aware of racial differences earlier than white children do (Allport, 1954; Arter, 1959).

Morland (1962) studied Negro and white nursery school children reared in a racially segregated community in order to find if such children were willing to accept the other race as playmates and whether they had preference for playmates of one race or the other. He found that, although a significantly larger number of Negro children accepted whites than white subjects did Negroes, the large majority of the children of both races "accepted" both Negro and white playmates, and very few rejected them for racial reasons. He found, however, that in picture choices both Negro and white children were more likely to "prefer" the white to the Negro children. He calls attention to the proposition that preference for one race does not imply rejection of the other. There was indication that white children of the lower socioeconomic groups more often than those of the upper socioeconomic groups accepted Negroes as playmates, but, when questioned, expressed a preference for white playmates. He suggests that "the majority of subjects manifested racial bias, but not necessarily racial prejudice." He also concludes that, as indicated in earlier studies, learning to prefer whites comes through "indirect" rather than through "direct" verbal instruction. He underlines a conclusion reached by a number of other investigators, that "racial attitudes are derived indirectly, rather than from direct contact with members of the race itself."

The above studies indicate that "bias" against colored children comes from indirect factors rather than from direct contact between the races, and these attitudes are present before children enter the kindergarten level of school. Schermer (1963), former head of Philadelphia's Commission on Human Relations, emphasized the fact that the quality of homes in city slums where Negroes are forced to live is such that they cannot solve the problem of the disadvantaged children who come from these homes. He says that the most likely agent for successful "upgrading" of personal and, particularly, of intellectual development is public school, where children of both races come together in a setting where desirable objectives are shared in common. (See Figure 80.)

Beatrice Chernock, principal of the Henry School near Philadelphia, describes this school in which integrated education is working smoothly in an integrated neighborhood into which Negroes and whites are moving *because* it is integrated and offers a background of understanding and cooperation these parents want for their children. The P.T.A. of the school is strong and an important factor in the success of school and neighborhood coordination. Negro families are attracted by the better education offered by better teachers in better buildings than can be found in Negro "ghettos." Progressive white families are attracted by the opportunity offered their children, as one mother put it, "to live in the world as it will be when the violence and fighting are finished."

Development of Ego and Sex Role Identification. *Ego identification* is a desire to *become like* the model in the future. Purcell (1962) defines identification as the wish of the child to become like one or the other of his parents. In *personal identification* the child is interested in acquiring the characteristics of a specific person, his parent. In *positional identification,*

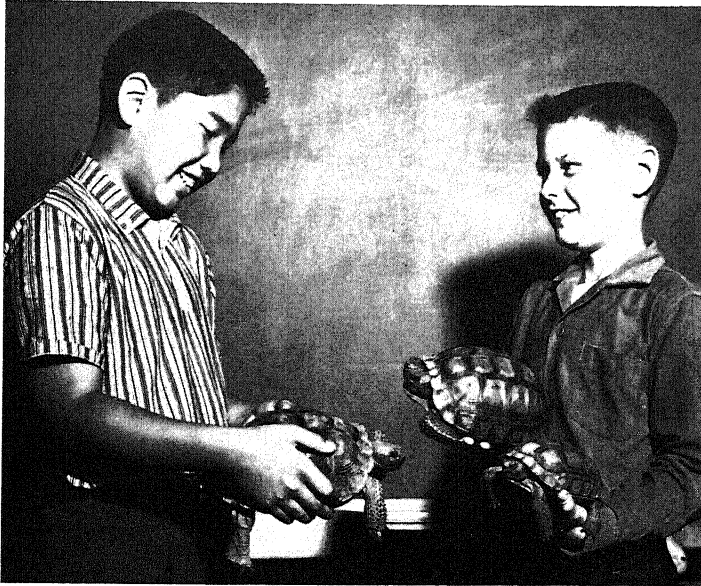



FIGURE 80. Racial barriers disappear when common interests are shared. (Courtesy Los Angeles Public Schools.)

he is interested in acquiring the status or position that adults generally have in relation to children. Infantile identification is "a magic need to *be* the security-giving object immediately in order not to have frustrating reality intrude upon one."

In Piaget's view, roles are systems of values and ideals which serve to control and direct the individual's behavior. Identification is distinguished from imitation in that (1) it is a motivated disposition rather than an instrumental response; namely, it is maintained without obvious extrinsic or situational rewards; and (2) similarity to the model is maintained in the absence of the model (Emnerich, 1959).

Freud discussed identification extensively, invariably basing it on "an emotional tie with an object—typically the parent." For the most part, Freudian theory of identification and its derivatives deal with identification as a mechanism through which behavior and motives are learned—that is, theories of identification deal primarily with the psychological forces that impel the child to emulate a model (Bronfenbrenner, 1960a). Psychoanalysts view identification as a substitute defense mechanism, namely as functioning to end a relationship of dependency and subordination to a real external object under conditions where such dependency is impossible to maintain (death or separation) or is extremely conflictual or painful (Kohlberg, 1963).

Hartup (1962) distinguishes between a behavioral concept of identification and a motivational concept of it. For example, imitation of a parent would be an example of identification as a behavioral concept. Hartup found a significant relationship between imitation of the like-sexed parent and appropriate sex-typing in girls, but not in boys. In doll play both boys and girls tended to imitate the like-sexed parent.

An important variable in the development of identification in the child is the effectiveness with which the parents function as models, and the clarity, explicitness and immediacy of goals and sanctions that he has communicated to the child (Rau, 1960).

Definition of the female sex role assumes that it consists of the complex of behaviors considered characteristic of or appropriate to persons occupying female status (Hartley, 1964). The female sex role at age 5 is specific to the attributes of the 5 year old and different from the female sex role at 25.

Konopka (1964) comments that *infants* are closely attached to a female person—the mother. The boy establishes his identity as a male through an early love relationship with his mother and then by separating himself from her and identifying himself with the father. The girl, too, as an infant is closest to the mother; but she establishes her identity as a woman by an early love relationship with the father and then identifying herself with the mother. The complicated part of this process is that, like the boy, the girl must loosen her bonds with the person she has been closest to as an infant, but, unlike the boy, she cannot move to another person for identification. This accounts for the adolescent girl's highly ambivalent feelings in relation to her mother and other females.

Johnson (1963) brought together a number of findings concerning sex role identification with the role of the mother and of the father. She offers the proposition that it is the identification with the father, in the sense of internalizing a reciprocal role relationship with the father, that is crucial for producing appropriate sex role orientations in both males and females. It is hypothesized that girls learn their expressive (feminine) role through interaction with the father in which he assumes a relatively undemanding and "appreciative" attitude toward them. Boys, on the other hand, learn the instrumental (masculine) role through interaction with the father in which he is more demanding and punitive. Johnson points out that both males and females first identify with the mother and that it is in this asexual love-dependency relationship that the basic superego is laid down.

Parents supply the child with his first definition of sex roles. Since this is so, the labels that are applied to father and mother tend to generalize to all males and females (Kagan, Hosken and Watson, 1961). Lynn (1962), however, found that males tend to identify with a cultural stereotype of the masculine role, whereas females tend to identify with aspects of their own mother's role specifically.

Evidence for sex role differentiation exists *at 4 years of age*. It seems reasonable to assume that some relevant preliminary processes must have been taking place earlier. Hartley (1964) comments on the lace-ruffled panties and dainty dresses for year old girls, and the "boyish" costumes for the year old boys. We comment on the rompers, then over-alls, then slacks which characterize the play clothes for girls, particularly in nonurban areas; then the sharp contrast when the little girl, the adolescent or the full-grown woman dresses for a party.

Mussen (1963) found that *in the first grade*, where children were low in appropriate sex role preferences, the highly masculine boys and highly feminine girls perceived their like-sexed parents as significantly warmer, more nurturing, and more affectionate. Although the boy's masculinity appeared not to be affected by other parental characteristics, there was evidence that the young girl's femininity is affected by several factors in

addition to warm mother-daughter relationships. Mothers of highly feminine girls were significantly more self-accepting, and the fathers of these girls tended to be more masculine and more encouraging of their daughters' participation in feminine activities.

De Luca (1963) found an orderly increase in the number of sex-appropriate choices for boys and girls through *the third grade. Fourth graders* made fewer appropriate choices than did third graders. Boys made more sex-appropriate choices than girls, and their superiority consistently increased into *the later school years.*

In New Zealand Landreth (1963) comments that in a variety of lusty sports boys compete more with boys and girls with girls in only slightly less lusty sports than is true in the United States. She adds that perhaps because of this difference there is little observable concern or interest in New Zealand in demonstrating masculinity or femininity by indulging in or refraining from sex stereotyped activities. She adds that in New Zealand boys have more interaction with male teachers and their fathers and girls with their mothers. Father is more of a companion and less of a caretaker.

Webb (1963), in a study of sex role preferences and adjustments in *early adolescence*, found that *the boy* enhances his adjustment at this time if he is able to make a masculine sex role preference, while *the girl* enhances her adjustment only if her sex role preference is flexible. This study suggests that the male as well as the female role may be in a state of confusion during the period of early adolescence.

Kagan and Moss (1962) say that the degree to which an adolescent or adult male will adhere to traditional masculine values can be previewed during the preschool years, even before the boy comes into contact with the elementary school environment. These authors say that the extraordinary continuity of the sex-typed traits is dramatic evidence of its importance in the individual's psychological development. They add that one important derivative of sex role identification involves the adult's vocational choice: the masculine boys choose traditional masculine careers, such as farming, athletic coaching, business, carpentry, mechanics and engineering. The group who in preschool years avoided gross-motor games and who preferred sedentary, noncompetitive activities, choose intellectual careers such as teaching, chemistry, biology, physics and psychiatry.

Sex Role and IQ. Childhood IQ was found to predict intensity of involvement in intellectual mastery *during adolescence*; the degree of rejection of the traditional sex role values was found to be positively correlated with mastery for girls (Kagan et al., 1963). Girls with higher IQ scores had mothers who urged them on to accomplishment during ages 4 to 7 and who were more criticizing during ages 2 to 4 than did girls with lower IQs. There seem to be no comparable studies for boys.

Components of a Healthy Personality. Goals of growth have been discussed elsewhere in this book. Here we wish to review briefly some of the goals for personality development as outlined in two outstanding discussions of the subject. As an antidote to a current feeling that a healthy personality suffers no conflicts or maladjustments, Thompson (1952) says:

> Normal adjustment is a relative thing. Every child suffers some anxiety, displays some behavior that is unacceptable to others, fails to reach some goals that are extremely important to him, and experiences some periods of what he calls unhappiness. However, the child whose

psychological adjustment can be considered within normal range 'bounces back' from these disappointments and depressions. He continues to orient his behavior toward goals that promise to satisfy his needs, and he adjusts his goal-setting to the social demands of his culture.

E. H. Eriksen, in the Midcentury White House Conference on Children and Youth (1951) lists the components of a healthy personality as follows:

1. A sense of trust—that sure feeling that everything is all right.
2. A sense of autonomy—that strong feeling.
3. A sense of initiative—that more clean-cut feeling: my plans and my ideas.
4. A sense of accomplishment—that feeling of importance: I can do.
5. A sense of identity—that new-old feeling: Who am I really?
6. A sense of intimacy—I am one with others and I care for others.
7. A parental sense—interest in producing and caring for children of one's own.
8. A sense of integrity—ability to accept the life cycle and the people involved in it.

We shall be following the development of some of these components below and in the next two chapters.

PATTERNS OF PERSONALITY DEVELOPMENT

Let us turn now to what studies show to be some of the stages or patterns by which children in our culture grow or develop, recalling always that these stages are only, in part, the product of innate inner growth forces; they are also the product of the impact of our particular American culture upon the average American child. We can understand children better as we meet them in school or informal education if we know something about the steps by which they develop their sense-of-self as contrasted with things or with the total social group; if we learn something about the development of their individuality as expressed by their attempts to stand as individuals against the impact of the social group, namely, about their aggressiveness or their conflict with the social group; and if we learn something about the manner in which they develop cooperativeness with the social group, namely, about cooperation, friendship, sympathy, respect for property rights, and other so-called "moral behavior."

Individual Differences. In considering these stages of development we must not lose sight of the vast individual differences which occur in personality reaction to situations. Some children are "in-going" or thoughtful, imaginative, and day-dreamy; others are "out-going," aggressive in attack upon things and people, easily stimulated to action by objects and situations outside themselves. Some cling to the protected area of dependence upon adults; others seek every opportunity to do things for themselves. One child, kept in a limited educational environment will, nevertheless, find things to do; another, even in a rich educational environment, will seem to miss most of the opportunities. One child, faced with a new baby in the family, will fight desperately for his placed in the center of the household; another child will welcome the freedom to do as he pleases so long as he does not get in the way. One child, placed in school and faced with reading and number work, seizes upon this as a way to exercise his inner capacities and to win status; another cannot give up the world of vigorous physical play, finding the challenge of the intellectual world colorless indeed; still another will cling to his world of fantasy, managing to escape the insistence of the schoolroom world.

Children differ, too, in the way they express themselves. One child, delighted with the touch of fur at a few months, may touch, shiver, crow his

delight, look around at the adults to share his pleasure with him; another child may touch, touch again, and continue to explore the new sensation, absorbed in the reaction itself and giving little open expression to his emotion. Expressions of sympathy differ widely even in the preschool years. One child may promptly cry himself when he sees another cry; another child may attempt to smother the sufferer with hugs and kisses, only adding to the confusion and unhappiness of the victim; still another may run for adult help; while yet another may start an intelligent probing to locate the cause of the difficulty. Even young children differ in the way they fight; some snatch and hit; others simply cry in impotent rage; a few use subtle methods of distraction and persuasion; an occasional child will drop the matter and wait for a more opportune moment for revenge.

Then, too, fundamental urges expressed at one level of development may prove a source of constant discipline, whereas expression of the same urge at another level may prove a source of great satisfaction. For example, keenly alert and inquisitive children who constantly explore the environment and exhaust the experimental possibilities of everything that comes to hand are a nuisance in their preschool years and are likely to receive constant discipline and restriction. This same faculty, properly guided and properly understood, may win steady acclaim in school because of the child's eagerness to learn, his ingenuity and resourcefulness in exploring the world about him. In adulthood, his refusal to drop a thing until he has explored its every possibility may make him a famous inventor or scientist.

Theories of Development of Self. There have been several studies on the accuracy of self-role perception. DeJung and Gardner (1962) found that pupils in grades five through twelve, when rated by themselves and checked against the ratings of other children of them, were in closer accord with the ratings made of them by opposite- than by same-sexed raters. A study of third and sixth grade children showed that there is a tendency for children who are highly "ego-involving" to have distortions in self-perception in the direction of self-enhancement; low ego-involving children tend to depreciate themselves in their self-estimates (Phillips, 1963).

Goslin (1962) found, in a study of adolescent boys and girls drawn from nineteen school classes, that children who perceive themselves differently from the way they are perceived by their peers tend to be isolated from the peer group. He concludes that from this one may infer that part of the quality which makes one acceptable to a peer group is the capacity to "see ourselves as others see us."

Rosenberg (1963) studied 1684 high school juniors and seniors, finding that children who are disturbed tend to see themselves with significantly lower self-esteem than do undisturbed children.

Several writers (Olson, 1959; Engel, 1962) emphasize the fact that ego development, like all phases of development, proceeds in a patterned, orderly way because of *inherent growth impulses* which are common to the human species. According to this theory, the major outlines of ego development can be expected to follow certain patterns common to all human beings, with only those variations occurring which can be clearly attributed to environmental impacts upon the given individual.

Stages of Ego Development. Tiny babies do not seem to know where their own bodies leave off and the crib or toy begins. We see them biting

a toe and looking puzzled because it "feels," whereas biting a rattle produces feeling only in tongue or mouth and in the fingers which hold it. In the same way, tiny babies seem to draw no clear line between themselves as ego structures or persons and the people around them; they cannot mark off where their own ego stops and that of someone else begins. Therefore, the influence of other people as closely identified with themselves as the mother or father or other close attendants is especially marked. What mother and father are, he himself is. What mother and father say is right; he has no judgment apart from theirs. His mother and father, the source of food and protection, the source of knowledge, and his alter-ego, are objects of supreme interest and influence in the life of the infant. They *are* his ego, the first extension of himself (Buhler, 1962). (See Figure 81.)

Having identified himself with his mother and father or nurse, the preschool child's circle of interest spreads to include other members of his family and friends who come frequently into his experience. What they think and feel and do he must think and feel and do. As Piaget (1952) points out, even when the child is 3 or 4 years old he assumes that others see the world as he does. One of the chief lessons the child learns from contact with other children in nursery school or kindergarten or in free play is that other children have mothers and fathers too, that they think and feel too; but that they think and feel and live as individuals, as separate entities, the same in many ways as the child himself, yet also different in many ways. It is the young child's tendency to identify himself with the world about him which makes him love stories of animals who keep house and think thoughts and have conversations, just as he does.

FIGURE 81. A 4 week old infant regards his mother intently. She is "his first extension of himself." (From Illingworth, R. S.: The Introduction into Developmental Assessment in the First Year. With permission of Messrs. E. & S. Livingstone, Ltd., 1962.)

In the sense that he identifies himself with his family in the early years of his life he is helpless against their influence. He has too little awareness of himself as a person, too little experience separate from theirs to question their opinions or to have a judgment of his own. He may, and usually does, fight hard for what he wants; but he has no self-criticism apart from their judgment of him, no sense of right and wrong apart from theirs.

Even his language reflects his absorption of the personal ideas and standards around him. Such words as "good," "bad," "pretty," "ugly," "funny," have for the young child only meanings reflected from other people. "Good" means that one complies with routines, tastes and standards of the people around one. "Bad"

means that one does not so comply, or that one hurts others or interferes with others. That one might differ with these ideas, having any ideas of one's own (any separate ego), is not possible to the nebulous self of a very young child. Maccoby (1959) has proposed that the young child acquires a repertory of actions by practicing covertly actions which are characteristic of the adults whom he contacts more frequently and who control the resources he needs. She has suggested also that such covert role playing may be the means by which the child learns not only adultlike social actions directed toward others but also reactions toward himself. We are reminded here of the 20 months old child who, at the stage of toilet training where he clearly wanted to stay dry even though patterns were not well enough established to make this possible, found himself wet. He took down his training panties and spanked himself saying, "Bad boy!"

Parents and family are still a source of self-concepts in adolescence, as is evidenced in a nationwide study of boys 14 through 16 years of age (Survey Research, 1955). In answer to the question, "What adult do you admire most, would you like to be like when you grow up?" 41 per cent named a member of their family: 25 per cent, father; 8 per cent, uncle; 2 per cent, mother; 6 per cent, another family member. Twenty-five per cent named some other adult close to himself; 16 per cent named an imaginary ideal; 9 per cent named some living hero or glamorous figure such as a scientist or movie TV star. Wheeler (1961) has confirmed this choice of parents in a study made in Australia, but found that as children grow older they choose parents less often and tend more to choose either imaginary composites of desirable qualities or blends of admired traits abstracted from more than one real person. As children grow older the self-concept becomes more objective and stable.

The fact that children develop self-concepts closely similar to the people who rear them needs consideration by people who adopt children. Since many adults have not developed flexibility as part of the core of their own personalities, they do not adapt readily to intimate family living with children who reflect standards and attitudes substantially different from their own. Older children have a self-concept which is the product of the people and experiences they have lived with. If children are adopted in infancy they tend to develop self-concepts somewhat, at least, compatible with those of the adopting parents. Few adoptions of children over 10 years of age prove to be happy experiences for either the children or the foster parents. Success in such adoptions requires unusual adaptability on the part of both child and parents and a miximum of similarity in tastes and standards. For smooth family living foster parents should either adopt very young children or assure themselves that the tastes and standards of an older child's previous home or homes are compatible with their own.

As he enters school the child encounters another, less close source of identification in his teacher. Insofar as the teacher follows the pattern of his home he has no reason to question the universality of the rights and wrongs, the feelings and prejudices, and the actions of his world. Insofar as the teacher differs from his home he must face decision, and with it growing self-judgment. His ego, then, is forced to withdraw from the universally evident, is compelled to set itself up as judge. Thus, he more clearly defines himself, marks out the beginnings of self-criticism, begins to question the universal rightness of the home pattern, and probably begins to reject certain opinions of his par-

ents. "But teacher says it is so-and-so," or "John's father says it is done this way" are familiar to the ears of parents of 6 year olds and thereafter throughout the growth years.

By *adolescence* the sense of clear-cut individuality, of self-criticism or independent capacity for judgment is usually at a freshly acquired peak. Therefore, the tendency to question everyone else's judgment, especially the judgment of the earliest patterns (the parents) is great, even though, as we saw above, parents still serve as an ideal. The new-found self-independence overweighs for a time the feeling of identification with any group other than the close feeling of unity with other adolescents. Coleman (1961) has collected a great deal of evidence that adolescents, cut off from large segments of society, find psychological support and social reward within their own group and depend upon each other. They create their own value systems. For example, in the early 1960's, among boys, the adolescent society values the athlete, the car owner, and the right family background. Among girls, social success, physical beauty, enticing manners, and nice clothes rate high among assets. The natural outcome is a tendency to reject any judgment but that of one's peers, a storming against adult authority, a railing against "old-fashioned conservatism." This sharp insistence upon the autonomy of one's own judgment may be a necessary part of the bolstering which the adolescent needs before he can break away at all from his childlike dependence upon the judgment of others. Only when he has convinced himself that he is no longer afraid can he have the courage and clear-headedness to weigh intelligently his own judgment in light of the wisdom of the race, the church, or his parents and to dream his own dreams (Fig. 82).

FIGURE 82. "And to dream dreams." (Courtesy of H. Armstrong Roberts.)

Development of the Sense of Failure or Success. Sound judgment about one's own successes or failures is an essential part of a healthy adult personality. Little children have none of it. A baby is delighted with himself when others are delighted with him. He is crestfallen when scolded. He tends to do whatever will bring the reward of approval and tends to avoid anything which results in disapproval (Landreth, 1958). He has no sense of success or failure within himself but will behave in any manner which will please the adult closest to him. By 3 or 4 years of age, however, children have set up a sufficient standard of what is expected of them to use it as a gauge of success or failure. They have also discovered a sense of success in controlling their own bodies and the world of things and people about them and have developed a sense of frustration or failure when they fail in these controls. They give evidences of these feelings of success and failure since, by the time they are 3 years old, success will cause them to change from passive to active behavior, whereas failure makes them appear dejected. A nursery school child who has just succeeded in going down the slide in the schoolyard for the first time will throw back his head to crow with delight, then burst into activity, usually repeating the stunt, though sometimes simply jumping up and down or running around excitedly. Failure to keep one's bed dry if parents are putting pressure on one to do so usually produces a "deflated" dejection, although such a failure may drive a certain type of child to noisy behavior as a cover-up.

The child must feel a challenge, however, before he reacts to success or failure. Tasks that are too simple in the mind of a child do not raise his ego feelings or reflect in his behavior when he succeeds, largely, it seems, because he considers them "baby stuff" and not worthy of pride. Similarly, tasks that are too far beyond him do not, as a rule, deflate him when he fails because he does not expect himself to succeed. It is important, therefore, that parents and teachers set a level of expectation for each child which will be within possible accomplishment, yet which will challenge effort. Well-adjusted, academically successful children respond to reasonable pressure for achievement by aspiring to levels of performance somewhat above previous performance.

Aspiration Level. A level of aspiration is a subjective goal for performance. It serves as a reference point for feelings of success or failure. To the problem solver, performance that exceeds the level of aspiration is success, and performance that falls short of the level of aspiration is failure. A level of aspiration is fundamentally an operational goal—a basis for action (Starbuck, 1963).

In adult life one's effectiveness lies in how well one accomplishes what one is best able to do. Society expects the best we have. Therefore, society's measurement of success is often couched in terms of what people do in relation to what they are able to do. Happiness is determined in an important way by whether one feels oneself a success or failure. Many people fail either because they aspire to things they cannot do or because they do not aspire to do what they are able to do. The relationship between what one aspires to do, what one does, and how one feels about it determines whether one is successful and happy. Although everyone differs in his aspiration level for different things (thinking it important to be good at business but feeling no urge to succeed in family life, for example), the general level of aspiration in relation to general level of accomplishment can be observed. Some people carry an aspiration level in general which either keeps them constantly failing in their own eyes

or which makes "impractical idealists" of them. Other people "have their feet on the ground," keeping their aspiration level constantly checked against their accomplishments, yet far enough in advance of accomplishment to keep progressing in accomplishment. Others carry low aspiration levels, lacking ambition and placidly getting nowhere.

People react differently when they realize that their accomplishment has fallen short of their aspiration. Some try to do better; some become discouraged and give up; some dream of success, or make excuses or use other forms of psychological escape; some combine these. The best reaction to failure to reach one's goal is either to do better, or, if the goal is set so high that good effort cannot reach it, to change the goal.

In early childhood the aspiration level is beginning to develop, and the habit of expecting nothing at all, or too much, or just enough of oneself is in the making. Indications from current studies are that by late adolescence the relationship between one's goal ambitions and the tempo of one's effort to achieve them is fairly well set.

We should teach children to evaluate themselves and their accomplishments in terms of goals which are high enough to stimulate constant growth, yet low enough to permit success with reasonable effort. By so doing we help them to lay a basic cornerstone for mental health. Circumstance, however, helps to mold this aspiration level, even when parents or teachers expect the right amount from each child. One dull child (80 IQ) whose parents were thoroughly aware of his ability and who, therefore, were very conscientious about not making him feel that they expected more than he could do, nevertheless went to pieces from a sense of failure in schoolwork. The key to his situation was four brothers and sisters with IQ's ranging from 120 to 150, whose academic accomplishments were so obvious that, even though the entire family conspired to keep such accomplishment in the background, the dull child knew he was not up to the family pattern. One of the strong arguments in favor of homogeneous groupings in schools is to keep dull children from an aspiration level set by inevitable competition with brighter children, and which, therefore, is too high for them. Similarly, homogeneous groupings keep brighter children from setting an aspiration level which is too low for their own good or the good of society. Competition of bright children with bright children tends to keep aspiration levels for these children where they are most effective.

On the premise that our objective in education is to teach children to expect great things of themselves, or at least to expect the best possible of themselves, we shall consider some of the studies on how best to accomplish this.

Effects of Praise and Blame. Early studies done in 1916 (Gilchrist) indicated that reproof of children motivates them to learn more effectively than praise does. This was in line with the "spare the rod and spoil the child" philosophy current in formal education and in parental attitudes of the 1890's and early 1900's. In other studies done in the late 1920's and early 1930's it was found, however, that the degree of effectiveness of reproof depended upon the kind used (Warden and Cohen, 1931). Reproof administered in private, for example, was more effective than reproof administered in public. Ridicule and sarcasm, particularly when used in public, resulted in a sharp drop in learning. One study on high school seniors showed that sarcasm used in public caused 6.2 per cent of the students to do better, 29 per cent to remain the same, but 64.5 per cent to do worse (Briggs, 1927). Sarcasm in

private was somewhat more effective but still caused many children to do worse. Reprimand used on junior high school or college students was less than effective when used in public (causing 46 per cent to do worse) but when used in private caused 83 per cent to do better. Public ridicule caused 64 per cent to do worse, whereas public commendation caused 91 per cent to do better.

The findings of these earlier studies, which indicated that certain forms of reproof disturbed children badly and that commendation, particularly in public, was on the whole an effective means of motivating learning, led to more careful work on the effects of praise and blame. For some years the philosophy governing child training was, "Always praise a child to get him to learn; do not punish or reprimand him"; "Always say do; never say don't." Child psychologists adopted this principle widely. Progressive parents and teachers felt that they must never reprimand a child but must always use a "positive" approach.

More current studies reveal that, although praise is, in the long run, more effective than reproof, a judicious combination of both is better than either used alone. Either used alone is, in turn, better than ignoring the child's effort. Much depends on the personality of the person administering the situation. We might grade the effectiveness of adult procedure with children somewhat as follows:

Ridicule or sarcasm (especially in public) – handicaps learning.

Ignoring child's effort – discouraging, or, at best, ineffectual.

Reproof (particularly if administered in private) – somewhat effective.

Praise (for genuine effort) – somewhat more effective.

Praise for good effort combined with reproof (especially when accompanied by constructive suggestion) – most effective of all methods.

A judicious adjustment of any method to individual children – absolutely necessary.

Effect on Motivation of Knowing the Results of Effort. One further principle of motivation has been established beyond doubt. There is no disagreement among a number of studies that children learn better when they know what the result of their work is than when they are left in doubt. This should speak loudly to teachers who throw children's papers in the wastebasket and to parents who do not trouble to follow through on tasks they ask children to do. Children who are learning a new skill or job should not be left in doubt as to whether the task they have done is satisfactory or unsatisfactory.

EXPERIENCES TO VITALIZE CLASSWORK

1. Observe the personality of some child, preferably one whom you know fairly well. List his outstanding traits, both desirable and undesirable. What traits need further development? Which ones need curbing? What would you regard as this child's "center of gravity" traits; which ones are peripheral? Should this have anything to do with your recommendations for change?
2. Visit a playground or other free play situation. Which children lead the group? Which are never leaders? Does leadership change from activity to activity? What personal qualities or skills make the leaders successful in leadership? Can you make suggestions for developing the nonleaders? Do you notice changes in position of leadership or followership as the group changes in personnel?
3. Find some child who hangs around the fringes of a baseball, marble, or other skill game. Take him (or her) aside for a few short periods of quiet practice in this skill. The practice should be spaced over several days. Do you see a change in his ascendant behavior as he returns to the group?
4. Do you recall from your own childhood a change in your own outlook on life when you changed from failure to success in schoolwork, or in games, or in helping with household chores, etc.? Can you remember other dramatic incidents which changed basic habits and attitudes for you? Did you make any basic changes in yourself as you came into the period of "self-awareness" in adolescence? How hard did you find it to re-educate a habit of years? How did you finally succeed in doing so?

5. Consult the most recent issues of Child Development Abstracts and of Psychological Abstracts for new studies on personality development and new personality tests. Bring this material to class for discussion. Watch especially for new material on projective methods.

SELECTED READINGS

Bennett, Ivy: Delinquent and Neurotic Children. Case Histories of Fifty Delinquent and Neurotic Children. New York, Basic Books, Inc., 1961.

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. Philadelphia, W. B. Saunders Co., 1963. Chapter Eleven, Development of Concepts of Self and Others: Emotional-Social Sequences and Interactions.

Coleman, J. C.: Personality Dynamics and Effective Behavior. Chicago, Scott, Foresman & Co., 1960; The Self as a Third Determinant, pp. 61-72.

Crow, L. D., and Crow, A. (ed.): Readings in Child and Adolescent Psychology. New York, David McKay Co., Inc., 1961. Chapter VI (32), Dimensions of Ego and Infantile Identification, by Wanda C. Bronson; Chapter II (12), Adolescence during the Middle Ages and Early Modern Times, by Crow and Crow.

Dulany, D. E., Jr. (ed.): Contributions to Modern Psychology. New York, Oxford University Press, 1958. Selections 32, Self-Acceptance and Adjustment; 33, Traditional Family Ideology and Its Relation to Personality; and 35, Permissive Child Rearing and Adult Behavior.

Engel, G. L.: Psychological Development in Health and Disease. Philadelphia, W. B. Saunders Co., 1962. Chapters X, XI, XII, XIII.

Petrullo, L., and Bass, B. M.: Leadership and Interpersonal Behavior. New York, Holt, Rinehart and Winston, Inc., 1961. Discusses theories and techniques of leadership.

Smith, I. E. (ed.): Readings in Adoption. New York, Philosophical Library, 1963. Forty articles by social workers long experienced in adoption services to children.

restrictions upon primitive behavior. The complete removal of restrictions is not desirable. A good teacher or parent understands that every child at some stage in this interplay between his impulses and society's restrictions will break down into undesirable behavior. Our task is to know when such behavior is simply evidence of an as-yet-incomplete learning, when it is evidence of confused attitudes that need basic retraining, or when it is the reflection of deep inner conflicts that need skilled professional help.

By adolescence most children have pretty well mastered the knowledge of what to fight for, when, against whom, and by what methods. The adolescent's problem is to apply this knowledge to himself. He still has desire, as do many adults, to fight for the wrong kind of recognition or possessions; he still suffers from immaturity in self-control and has childish habits to overcome.

COOPERATION AND FRIENDSHIP

Ausubel (1958) says: "Competition is an ego-oriented, self-aggrandizing activity in which the individual vies with others for hierarchical pre-eminence. Cooperation is a group-oriented activity in which the individual collaborates with others to achieve some common goal. Nevertheless, neither developmentally nor in terms of psychological content are these two activities wholly antithetical to each other: both imply a considerable degree of interaction within the group as opposed to individual behavior that is carried on with little reference to the activities of others. The child pursues a solitary course with his peers before he is either cooperative or competitive; both types of behavior increase as individualism subsides." As we shall see below, competition in many ways yields to cooperation as growth proceeds. Since cooperation requires greater cognitive and perceptual maturity than does competition, the child can perceive the advantages of cooperation only as he matures into later childhood.

Three Kinds of Personal Relationship. The child's development in capacity to make friends outside the family is ordinarily regarded as one of the most important aspects of his social development. Some people live fairly satisfactory lives in social communities with few, if any, friends; but they are the exception rather than the rule. Other people claim hundreds of "friends" who are really only acquaintances or playmates, few, if any, of whom can stand the test of tragedy or serious demand upon the relationship. The ideal in our American culture seems to be the capacity to "meet any man at his own level" or "to win friends and influence people." This involves three different types of relationship to people. One type of relationship is involved in the superficial social techniques of what to say and do at teas or receptions and how to "sell" in the business world. Another type consists of maintaining smooth relationships with the people at the office or in the school dormitory or adult club, getting along with people, whether or not we like them, because they are where we have to meet them or work with them frequently. A third type of relationship consists of those intimate harmonizings of person with person that close friendship and family living require. The finest of our American ideals implies mastery of all three types of social relationships.

Children must learn something of *social "skills"* as such, something of ease and poise, along with reasonable self-confidence if they are to master the first type of personal relationship. "Smooth" business or social manner eases the way for casual social relation-

ships or for good selling or business contacts. Knowing what to do with one's hands and feet, how to introduce people, how to order lunch and eat it, how to talk smoothly and convincingly about nothing in particular or about "the product" or "the company" are all invaluable. These skills and "manners" are grounded most securely if learned early. Four year olds who have learned not to smack lips or gobble food are not likely to forget in a critical deal over a luncheon table in adulthood. Smooth voice, free flow of good grammar and diction, ease in introductions and casual conversation come through patterns set for the child by parents and friends and, on certain occasions, by teachers; they are achieved through early and relentless practice. Consideration for the comfort, the desires and the ego of others comes through exposure to such consideration in childhood or through unremitting self-discipline and close observation of the reactions of others in later childhood and adulthood. Some people who missed these "cultural" advantages in childhood learn through grim determination in a college dormitory or through conscientious practice based upon books of etiquette. Poor habits of grammar learned and practiced in childhood may be lost through relentless practice in adolescence or early adulthood, but in crises the old habits may spring up and trick one, even after years of constant practice.

The second type of personal relationship can also be acquired later in childhood, though it is based even more upon early childhood beginnings. To keep one's temper day after day in the face of irritating traits displayed by fraternity brothers, or the other people in the office, requires self-control. To keep one's personal grievances to oneself requires the knowledge that only friends and family care about such things, plus the self-control to keep one's tongue and to smile when grouchy. To work whether or not one feels inspired, to carry one's share, to "make good" without snatching authority from others, to take or to give orders effectively—all this depends in most people upon basic habits and attitudes built through childhood. Schoolteachers, church workers and others who supervise the work and play of children have constant opportunities to teach them to *live and work and play skillfully and effectively with whatever group propinquity provides.* "Being a good sport" carries a clear set of concepts and patterns of behavior in the minds of most elementary and secondary school children.

Intimate friendships and family living, the third type of personal relationship, test the deepest facets of the personality. Here one cannot cloak impulses and desires, habits, and basic attitudes. In time, close living and close friendship reveal what one is. In a certain sense the only preparation for this type of personal relationship is the laying of sound foundations in the personality structure. In another sense, however, friendship and successful family living can be learned; for, even though the relationships involved test what one is, a certain "art" of friendship and love can be acquired. There is something more to friendship and love than just being a person; one must know how to find and win other persons who will respond to one's real self, and, ideally, each person should become a richer, more useful and happy personality because of friendship and love experiences. There are difficulties involved in this, as Erikson (1950) explains in discussing the difficulty of making the transition from self-interest to interest in others. He points out that this transition involves a threat to the self in the surrender to intimate relationships with others.

Even elementary school children

learn something of this art of revealing themselves to others and of responding to others on a friendship basis. Kindergarten and preschool children learn less consciously, but deep foundations for the friendship and family-life relationship are being laid nevertheless in the first years of life. How much one concedes to the people one loves, or demands of them; whether one "goes to war" in the open about differences of opinion and desire or disciplines one's own resentments, loyalty or self-centeredness; whether one is generous or selfish, cheerfully accepting or glumly resistant—these are all attitudes and practices in intimate living caught as patterns from the intimate living one knows best in childhood. Family attitudes, viz., what men are like and what they expect of or concede to women, what women are like and what they expect of or concede to men, whose work is what, who manages money or dominates the relationship, what parental duties, responsibilities or privileges are—these are absorbed early and throughout childhood from one's own parents and immediate relatives.

However, even in these most intimate relationships, much is learned on the way through life. Each friend loved happily or unhappily teaches most people something. Next to parents, perhaps, the most influential person in making one's personality is one's mate. Next to families and beloved teachers or informal education leaders, children probably learn most, socially and personally, from their friends.

Social Behavior in Infants. The biological theories of Gesell (1934) and Shirley (1935) about the social behavior of infants were widely accepted and taught since then, but have been questioned in the 1960's. Caldwell (1962) comments that these theories "leave one with the feeling that there is nothing to do but wait." Shirley, for example, said that babies develop personalities in harmony with those of their families, which could perhaps carry overtones of an implication that personalities are in a sense inherited. Caldwell refers to a mother-infant diad (close two-way interrelationship) which is likely to consider the infant as a *stimulating* as well as a *passively stimulated* organism. Instead of first reacting passively to whatever comes to him, he is himself a source of stimulation to his mother, thus affecting as well as reacting to the relationship between them. Ingram (1962) corroborates this viewpoint.

Yarrow (1963), in a study of infancy and early childhood in 96 infants in adoptive homes and of a control group in own homes, concluded that perhaps the most striking finding was the extent to which developmental progress during the first six months appears to be influenced by maternal stimulation (both achievement and social) and the quality of that stimulation.

Rheingold (1962), who has made extensive studies of infant development, found that the *infant* gives his *first full social response* "in all its spontaneity, vivacity and delight." Some measure of the infant's social responsiveness can be seen in the study of Rheingold (1956), which found that the number of vocalizations in the infant could be almost doubled in two days by providing no more than a social response following each vocalization of the infant. On the other hand, continued and extreme deprivation of such social interresponsiveness between infant and people results in incomplete and incompetent responses, while short-term deprivation increases the responsiveness of the organism to the stimuli of which it has been deprived.

Yarrow (1963), in a study of institution- versus mother-reared infants, found that infants who, *during the*

first six months, were in an environment characterized by frequent and exuberant expressions of positive feeling tend to develop a high degree of social initiative. He concluded that it seems apparent that direct efforts to elicit social response are not so effective in developing outgoing social behavior as an atmosphere charged with a high degree of positive affect.

He adds a suggestion that there may be a minimal level of consistency necessary for the infant to be able to relate, with some degree of integration, to his environment. After this minimum level of consistency is reached, other factors, such as the quality of contact, become more significant. A complete and monotonous predictability from day to day may not be a desirable characteristic of the environment for young infants.

Provence and Lipton (1963) found that institution-reared infants, in contrast to a group of infants reared in foster homes, were retarded in social reaction, language development, reaction to toys, and self-discovery. However, as we have seen earlier (in Chapter 9), institutions that provide adequate sensory stimulation and social interchange do not compare unfavorably with homes in the social and intellectual development of their infants.

DEVELOPMENT OF SOCIAL BEHAVIOR. Smiling in infants is generally assumed to be a sign of beginning social development. The first smile in home-reared infants was found by Ambrose (1961) to occur around 13 weeks of age, in contrast to the institution-reared infant, in whom it occurred around 20 weeks. At 17 to 25 weeks general smiling begins to decline and the child begins to smile only at his caretakers.

The human infant under 5 months usually smiles at any human face (or model of a face) that arrests his attention if two eyes, a forehead, and some sort of movement are visible. As he grows older he becomes increasingly discriminating, and smiles are increasingly reserved for humans. Around 6 to 12 months the baby may begin to react with wariness, which may become intense fear if he is confronted with a stranger (Freedman, 1961).

Ainsworth (1964) found the same principles of infant social development in all infants regardless of specific racial or cultural influences. She found African babies somewhat more accelerated on the Gesell Developmental Schedules than the other babies she studied and hypothesized that this may be associated with the fact that the African (Baganda) babies were breast-fed and that they experienced more interaction with adult figures than many infants in our culture. "The model pattern was that a baby was never alone when awake; characteristically, he is held in someone's lap, or placed on the floor in the center of the gathering, and as soon as he can crawl, moves freely to initiate contacts or to withdraw at will."

Illingworth (1962) summarizes the development of general understanding and social development of the infant as follows:

4 weeks: Watches mother intently when she speaks to him. Opens and closes mouth. Smiles certainly by six weeks.

8 weeks: Vocalizes and smiles. Interested in surroundings.

12 weeks: Excited when toy is presented. "Talks" a great deal when spoken to.

16 weeks: Anticipates and excites when food is prepared. Interest in strange rooms. Laughs.

20 weeks: Smiles at mirror image. Discovers his own body (Fig. 83).

24 weeks: Annoyed by removal of toy. Holds arms out to be picked up. Likes and dislikes of foods. Looks to see where dropped cube has fallen.

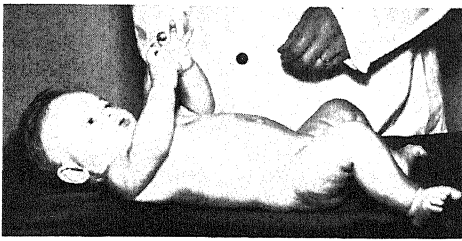



FIGURE 83. Twelve to 20 weeks: Discovers his own body. (From Illingworth, R. S.: The Introduction into Developmental Assessment in the First Year. With permission of Messrs. E. & S. Livingstone, Ltd., 1962.)

28 weeks: Imitation beginning (26 to 28 weeks). Expectation in response to repetition of stimuli. Tries to attract attention by cough.
32 weeks: Tries persistently to get hold of toys out of reach. Responds to "No."
36 weeks: Compares two cubes by bringing them together.
40 weeks: Pulls mother's clothes to attract attention. Waves "bye-bye." Pat-a-cakes. Repeats performances laughed at.
44 weeks: Drops toys deliberately to be picked up.
48 weeks: Anticipates body movement in nursery rhyme. Interest in pictures in book.

Social Behavior in the Preschool Years. At 18 months of age children have a sense of "me" and "mine," both words being frequent in speech at this time. The run-about child is in his own way as self-absorbed as the infant. The world offers endless possibilities for exploration and new experience. This creates discipline problems since much of what he gets into is and should be forbidden. Thus, at times he finds people an annoyance and a hindrance to his will. He does, however, interrupt his activities as a rule to "notice" newcomers, either adults or children and, even though he seems to have been little aware of them, may cry if they leave.

Most day nurseries accept children of 1½ years to 2 years of age. Even with a number of them together, however, there is nothing that resembles group cohesiveness. Children in the earliest stage of group social development spend most of their time in *solitary play*. Teachers of 2 year olds should expect very little, if any, group cooperation.

Very young children play beside other children, rather than with them, a form of play referred to as *parallel play*. In this each child plays pretty much by himself, yet enjoys his play more, has more ideas about it because of occasional interchange of ideas between the children, and stays with it longer than he does when by himself. Even at this age and under these conditions of play the children influence each other somewhat. A bad "snatcher" may create more conflicts, a cry-baby may stimulate more emotional scenes than would be natural to the average child. On the other hand, a cooperative child with a fairly strong personality may influence the other children favorably. Friendship as such scarcely exists since almost any child will do as well as any other child to play with. Kindergarten and first grade teachers must learn to recognize this type of play among their less experienced pupils. Unless children have a certain amount of exposure to other children, they cannot grow through the various stages of social development. Inexperienced kindergarten children usually spend much of their first year passing through this parallel play stage and the other stages characteristic of preschool children. Solitary play, which is characteristic of infancy and early preschool years, and which is preserved as a habit when opportunity for group social growth is lacking through 2 or 3 years, may be hard to overcome. The teacher should welcome even so immature a form of social behavior as parallel play if it indicates that the

given child is moving forward a step from infancy. Our job is to know what steps to expect and to guide children through these steps as rapidly as they can absorb the necessary learnings characteristic of each step.

Three year old children, though still self-absorbed, are, if given proper opportunity to play with other children, increasingly aware of others. In spite of the fact that solitary and parallel play are still dominant, socialization proceeds in the form of learning to take turns at swing or slide and in the elementary sharing of toys. At 4 years children exposed to other children become aware of themselves as belonging to a group. In nursery school they can be heard to ask, "Is this what the children do here?" thus showing their awareness of themselves as children in contrast to adults and their growing identification of themselves with other children. Whereas a 2 year old is seldom successful in eliciting a desired response from other children, a 4 year old often succeeds and shows such a wide repertory of social responses as reaction to the distress of others, making requests for assistance from other children, making suggestions for dramatic play, and utilizing a variety of techniques of acceptance, refusal, evasion or transformation of the situation. Murphy (1956) sketches development of social expression as, first, a tendency to help others only when it is convenient or when it does not interfere with plans and, only later, the development of a tendency to stop what one is doing in order to help another. Expressions of sympathy from young children are rudimentary and vary from child to child, some children simply staring at another in distress, occasional children putting an arm around the sufferer saying, "Does it hurt?" or "What are you crying for?" Some preschool children even progress far enough to show kindness to newcomers in a group or to defend the rights of younger children.

Stott, L. H., (1962) has summarized the longitudinal records of the Merrill-Palmer Institute and found certain common social dispositions underlying the observed behavior of *4 year old children.* He describes these as follows:

1. Personal Responsibility vs. Irresponsible Impulsiveness.
2. Assertiveness vs. Apprehensive Withdrawal.
3. Independence vs. Dependence.
4. Sociocentricity vs. Egocentricity.
5. Need for Belonging vs. Individualistic Self-sufficiency.
6. Insecurity vs. Relaxed Spontaneity.
7. Isolate Egocentricity vs. Social Integrativeness.
8. Social Domination vs. Withdrawal.
9. Compulsive Domination vs. Social Adaptability.
10. Social Ease vs. Shy Friendliness.
11. Kindness vs. (something for which there was not sufficient data to identify).
12. Personal Instability vs. Stability and Inner Control.
13. Self-reliance vs. Lack of "Staying Power."

These were regarded as behavioral dispositions common to children. They are expressed in the play of different children, however, in widely varying relative strength and in terms of a variety of specific patterns of behavior. "It is in the uniqueness of patterning of these traits, and other personal characteristics that the individuality largely resides and continues to identify him throughout life."

Stott also comments that "the psychological life of the child at age four is already very complex. His babyhood is now some two years behind him. He has lost the sense of power and status which, in his complete dependence, he formerly enjoyed in the experience of having the 'significant others' in his life heavily subservient to his will. Now, with his rapidly growing repertory of locomotor, ma-

nipulative, and verbal skills, he has gained a measure of independence and the beginnings of a new sense of primary status based upon his growing ability to 'do' for himself."

The Transition from Early to Late Childhood. It seems in the nature of 4 to 8 or 10 year olds to show contradictory social traits. They fight their best friends and most beloved brothers and sisters more than they fight other children, probably because they spend more time with these children and therefore "run afoul" of each other's self-absorptions and selfishnesses more often. The most aggressive children are often the most sympathetic when anyone else is hurt or in trouble. Murphy (1956) found that children who showed outstandingly sympathetic behavior sometimes displayed exceedingly unsympathetic or even cruel behavior. This is true of girls as well as boys.

During this 4 to 8 or 10 year old period the child moves forward from solitary and parallel play into genuine group play. Medinnus (1962) found that first-grade boys show a greater tendency to differentiate choice of playmates along sex lines than girls do. Highly organized group activity becomes characteristic of the gang age, which is usually set at anywhere from 8 to 10 years of age through adolescence. As a transition before this we find children playing in *shifting groups*, a form of play in which group activity goes on but the form of organization is so loose that any individual child may abandon the group for his own activities without disturbing the project. Highly popular projects at this age are keeping store, playing show, or playing school. Child A and B may say, "Let's play store." They build the store, but meanwhile child C or D may join, lay a few blocks, or decide to make vegetables or other produce out of clay. Child E may elect himself check-out boy—even before there are any customers or produce. Child A may wander off to ride his wagon a while, yet the project goes on. In these shifting groups much can be learned that prepares children for the more highly organized play of the gang age. Yet, as they should be, lessons are geared so low that neither children nor project suffers if any child grows tired of group adjustment and withdraws to the peace of solitary play while he rests. Such leadership as exists in these shifting group projects is likely to be unstable in the sense that it passes from one child to another without any particular upheaval, and the child who leads most often today may gradually give way to another who leads most often three months from now. However, teachers of young children have often observed that a certain group cohesiveness may center in one given child, so that when that child leaves or is absent such group spirit as existed dissolves and the children who had participated in the group return to play as individuals again.

Social Behavior in School-age Children. The elementary school period of growth is often referred to as the gang age because children tend to play in groups made up of more or less continuing membership. The groups into which girls organize themselves are often referred to as cliques, whereas the boys' groups are referred to as gangs; both are usually referred to in current writings as "peer groups." In the elementary school, girls' cliques are less well organized and have less well-defined purposes and less outstanding leaders than boys' gangs. Girls organize as frequently as boys, but on less conspicuous bases, with the result that boys' clubs or gangs have been much more frequently studied. A study of Girl Scouts showed that 25 per cent of the 7 year olds and 44 per cent of the 9 year olds belonged to at least one other formally organized

club, the number increasing with age until at 13 44 per cent belonged to school clubs, 33 per cent to church clubs, 18 per cent belonged to school and church clubs as well as to Scouts. A high percentage (from 42 to 52 per cent) of these girls at each age also took some sort of private lesson or lessons in addition to club and Scout activities.

Interest in clubs and enthusiasm for team games in which the team, not the individual, wins or loses are accepted by most writers as characteristic of group play during the upper elementary and early secondary school periods. After 8 years of age there develops an interest in the organization itself rather than in the activity. Clubs with passwords, initiations and an attitude of exclusiveness or "You can't belong" become frequent. "The Dirty Dozen," "Three Musketeers," "Jones Street Gang" are typical names. Directors of playgrounds and settlement houses find special interest clubs easy to form; "The Adventure Club," "The Hobby Club" are typical.

Gesell found that although groups are important to the social life of the 10 to 16 year old, individual friendships were also important. There were wide individual differences in this, however. His studies show that, on the whole, 10 year old boys mingle easily with each other; some have one or two best friends, others are part of a gang and some have both. Girls at 10 have difficulties of an emotional nature in dealing with each other but do not stay mad long; most have a best friend, often several, and tend to be critical of each other; some have many friends.

Boys of 12 have a large number of good or best friends and are less likely than at 10 to play with anyone who happens to be in the neighborhood. They tend, rather, to get a group of more selected friends together for activities. Girls of 12 generally have several friends, but sometimes separate off from the group with one or two special friends; a few now have difficulty making friends.

Gesell found that group friendships go on into adolescence. By 14 boys tend to have "a whole gang" of friends, but these are selected, usually from a school rather than a neighborhood group. Sports are usually the main interest they have in common. Girls, too, at this age may have a group of friends who live in different parts of town; each school class seems to have its "gang" (not club) of the more popular and successful girls.

By 16 boys have one or two best friends of long standing, but many of them are still part of a rather large "gang" or "bunch," as they are called. Girls of 16 generally have individual best friends and also belong to some sort of group such as Scouts, a sorority, a church group. Dating, as we shall see in Chapter 14, is an increasingly important part of the social life of girls after 14 and of boys after 15.

Hollingworth found that gifted children (IQ above 180) often do not have a peer group experience because there are too few children near their ages who prove to be congenial to them. Terman and Oden (1959) give convincing evidence, however, that gifted children are above average in social skills. They simply have such a wide variety of interests that they spend a great deal of time with things and ideas, whereas less gifted children spend most of their time with people.

Influence of Groups upon Personality. It is generally agreed among writers in child development that children learn invaluable life lessons in group play. The influence of the peer group on the formation of personality is generally noted.

The teenager's feeling of acceptance or rejection by the group determines to a great extent his self-picture as a social success or failure. Van Krevlen (1962) studied summer camp teen-age

peer groups in an attempt to find out what factors influence the evaluation of the individual by the peer group, and what characteristics give the individual an "identity" with his peers. Of 65 girls studied, 52 selected someone their own age as the person whom they wished to describe for the purpose of the study. Six chose younger and 7 chose older campers to describe. In describing each other, there were age differences in the type of characteristics named. For example, 50 per cent of the 13 year olds used "good natured"; 45 per cent of the 14 year olds used it; but only 17 per cent of the 15 year olds listed items that could be categorized as consideration for others, and sense of humor.

French (1956) found that attractive groups have relatively great power over individual members. Festinger (1953) found that there tends to be a high degree of conformity to opinions advocated by attractive (liked) groups. In contrast to these two studies, Berkowitz (1957) concluded it is probable that individuals may conform to and adopt opinions held by liked groups because liking the group has increased the perceived merit of the group's opinions.

Children and adolescents tend to belong to small groups with uniform or consistent standards that reduce the confusion over what is right behavior (Berelson and Steiner, 1964). These small groups strongly influence the behavior of their members by setting and/or enforcing norms for proper behavior by the members—including a variety of situations not directly involved in the activities of the groups themselves.

Miller et al. (1961) discuss *the influence of the peer group* in the relation to aggressive behavior. In one "street-corner" group composed of white Catholic boys ages 14 to 16, 70 per cent of the aggressive acts of the group were directed by group members. Ninety-four per cent of these acts were not physical but involved mostly verbal expressions, a large part of which contained an explicit evaluative component. These authors concluded that the group's method of dealing with aggression performs an efficient, stabilizing and integrative function for both the group and its members.

Delinquency Bennett (1960) regards a child as delinquent if he continues to show extreme forms of antisocial behavior after the latency period. Neumeyer (1961) says that delinquency arises in the matrix of sociopersonal disorganization and in the sequence of experiences and influences that shape behavior problems. It is the product of a dynamic social process, involving numerous variables and the failure of personal and social controls.

The Police Department of Los Angeles (an area of delinquency next highest to New York City) reported in The Los Angeles Times, April 12, 1963, that of the more than 800,000 juveniles in the city, between 10,000 and 20,000 were associated in some ways with gangs. About a dozen of these *gangs* the police call "hard core"—the kind involved extensively in crimes of violence, as well as theft, burglary and auto theft. Gang "incidents" in Los Angeles increased from 422 in 1961 to 729 in 1962—a trend which directly paralleled the upward trend in adult crime in that community.

It becomes apparent, then, that *delinquency is a symptom of deep socioeconomic and social ailments.* These ailments are complicated by the distribution of narcotics by organized narcotic peddlers to high-school-aged young people. Also, as one juvenile offender answered, when asked why he "messed around" with his particular gang, "Man! There's nothing to do!"

Kahn (1963), in his book *Planning Community Services for Children in Trouble*, says that the factors that cause or promote delinquency are multiple; they lie not only in the family and local neighborhood of the delinquent but in broader community and social forces. He says that a "police vacuum" exists in planning for children in trouble, and points to the confusion, and often conflict, in community policies and programs conducted in the interest of children's welfare. He urges an integration of delinquency prevention and control programs designed to affect such trends as population mobility and urban growth, both of which contribute to delinquency.

In a study of the effect of parental absence upon the boys, McCord and Thurber (1962) carefully observed 205 boys and their families during a period of approximately five years of their early adolescence along with current court records for felonies. They found that there was intense sexual anxiety among almost half of the boys who had lost their fathers; but this anxiety seemed to be a response to a generally unstable environment rather than to paternal absence as such. Gang delinquency was found to be unrelated to paternal absence, but did occur more frequently in *broken homes* in which the father or the mother had been replaced by substitutes. The proportion of gang delinquents among boys whose parents quarreled but remained together was significantly higher than among those whose fathers were absent.

Easson and Steinhilber (1961) found that murder and murderous assault by children and adolescents occurs where there is parental fostering, albeit unconscious. Among eight children under 17 years of age so involved, all demonstrated that one or both parents had fostered and condoned murderous assault.

Bennett (1960) gives evidence to support the thesis that there is a distinct pattern of parental deprivation and neglect characteristic of the early years of "delinquents," whereas more subtle factors operate in the early lives of neurotics.

Although there is evidence that discord in the home is as potent, if not more potent, than absence of the parents, there is substantial evidence that the absence of the mother in the home, or that institutional care for children especially in the early years of childhood and at adolescence, is a cogent factor in the development of undesirable social behavior. Ainsworth et al. (1962) suggest that previous conclusions about the effect of maternal deprivation may need to be re-evaluated, and that in any case we should remain open-minded about the matter.

Most of this preceding discussion has been about boys. Konopka (1964) studied *delinquent girls* in Minnesota and found that cultural expectations are especially confusing for girls. For example, while the girl is educated to choose her place in the working life of the community, and is encouraged to become a participating citizen, she frequently encounters not only job discrimination but also rejection of her intellect. Femininity and intelligent self-direction are regarded as contradictions.

Konopka continues by saying that "while the prevailing attitude toward delinquent boys is 'boys will be boys,' the attitude toward delinquent girls is usually one of deep resentment, especially when they have acted outside of conventional patterns. The girls themselves are usually full of inner helplessness or hostility which they are unable to express or channel in any constructive way." She adds that although delinquent boys and girls have problems specific to their sex, problems that the girls face lie partially in

which could bring recognition for doing a constructive act rather than the habitual destructive acts, assists in the rehabilitation of the individual. Caplan (1961) says that helping the young person to feel worthwhile, noticed, and praised for helping rather than hindering other people is a richer source of inspiration for correction and prevention of delinquency than any punitive program could be.

In this discussion we should never forget the vast majority of children and young people who use group activity to service school and community and to develop constructive aspects of personality.

Competition as Aspect of Group Relations. The effect upon children's personalities of experiences of conflict or competition and of cooperation and friendship within the peer group, or found elsewhere at the gang age, deserves some further comment. Even though the gang is primarily a teacher of cooperation, the gang age is a period in which children either naturally or by copy from our American cultural pattern indulge in competition in speed, strength, endurance and fortitude (Fig. 84). In the classroom they can easily be led into competition for first place in arithmetic or other academic subjects. Competition is, in fact, so widely used as a motive for effort among children at home, in school and in informal educational groups that we should review any justification for it offered by the literature. A number of studies on the effect of group competition and individual rivalry upon effort and learning show

FIGURE 84. Competition in speed and strength. (Courtesy of H. Armstrong Roberts.)

that, whether in this country or other countries, among preschool, grade school, high school or college children the results are the same. Competition and rivalry produce results in effort and in speed of accomplishment. However, there are individual differences in responsiveness. Some children show a strong desire to excel, some remain calm and fairly indifferent to competition, still others are frustrated and disturbed by it. Some studies show boys responding more vigorously than girls; some indicate that elementary and high school children respond to competition more than preschool children. Even among preschool children there seem to be differences, the 2 year olds merely looking on and failing to get the idea, the 3 and 4 year olds responding to rivalry from children next older than themselves, the 5 year olds showing genuine rivalry-dominance patterns like those of elementary school children.

Experimentally, then, we can say little against competition and rivalry as methods to be used in motivating children. The widespread opposition to competition as a motivation for children has risen, not from grounds that it does not work, but rather from grounds of philosophy. Many people feel that schools and informal educational agencies like churches, camps and settlements should not further develop an impulse which so dominates our present American culture but which, they feel, is not conducive to the best welfare of either individuals or of humanity. Aggression, domination and rivalry are not part of the religious or moral teaching in most religious philosophies. Yet they flourish in our business and social world. The people who are struggling to motivate children from some other source are doubtless struggling to break the hold that everyday motives have over our behavior.

Varieties of Competition. "The most primitive cause of a competitive situation is probably the existence of an unsharable goal object" (Baldwin, 1958). This is true of all ages. It appears in clearly recognizable form in young children. We see them struggling for the same toy, each hanging on until the stronger or more aggressive one gets it, that is, unless someone interferes. Baldwin refers to a second type of competitive situation in which harming another person is a means of winning as, for example, in the playing of games when one person or one team must set back or defeat the other. Young children find it hard to be defeated; older children have the discipline of their peers to help them "put on a good face" in defeat. Among older children competition for a first place in school or to be pitcher on the baseball team or a cheerleader usually leaves the loser or losers frustrated and struggling to be gracious to the winner. It is an evidence of genuine personality maturity when the individual finds the game just a game and not only can act like a sportsman when he loses but is truly free of chagrin. In adulthood, the ability to do one's best and to live life by one's own values (rather than by competition with "the Joneses") again reveals sound personality health.

Competition is often close to hostility in appearance, since in competition two or more people are each trying to triumph over the others. Competition is, therefore, easily transformed into hostility. On the other hand, some hostility appears to be as much competition as aggression. We see young children using commands, threats or force to gain their objectives. This is not very well integrated or socially mature behavior, since integrative behavior means some yielding to another, the finding of a common purpose among differences of opinion, and cooperation. Among young chil-

dren dominating behavior calls out either domination or submission from the other child but not integrative or socially desirable behavior. In contrast to this, however, integrative behavior on the part of one child tends to call out integrative behavior from the other. Among older children domination by a peer group leader may force submission from the rest of the group outwardly but may actually create counter dominance in the other children and in such cases is, therefore, not socially healthy as a technique. Adult leaders can often help children to develop more satisfactory group techniques than the lower form of competition between members.

Competition between one group and other groups serves to solidify the group within itself and proves, therefore, healthy for the spirit of any specific group. This is a universal social phenomenon. War with another nation tends to wipe out differences of race and creed within the nations at war, fanning loyalty to the country into a clear flame. Group leaders of children, teachers, settlement workers, scout leaders, church leaders, all recognize this principle when they set up competition with other groups, trying, of course, to keep the rivalry on a friendly and sportsmanlike basis.

Factors Affecting Conflict and Co-operation. The *age range of children* in a group affects conflict and cooperation with the group. Confusion and conflict result if children of too widely differing ages are put into a program that does not allow a wide choice of activity and adequate equipment for play or work. In schools or on playgrounds where activities are scheduled or space limited, wide age ranges create confusion and conflict. The general experience of school personnel corroborates this since they try to group children by age and ability rather than in groups representing wide ranges of age and ability. Most camp, settlement and playground workers find that 4 and 5 year olds do not mix well with 10 and 12 year olds, nor do preadolescents mix well with postadolescents.

The effect of *large or small groupings* depends a good deal upon the child. Some children are confused and unable to get into effective action in groups of more than two or three. These children seek always to avoid the larger peer groups and to find one or two special friends. Other children seem to function best in larger groups, playing most happily in groups of eight or ten to eighteen or twenty, and working best in groups of twenty-five to forty.

An important factor in determining whether any given child reacts favorably or unfavorably to any given group is *the capacities and interests* of that child and *of the majority of the group*. An extremely active child who prefers large-muscle play may find himself ostracized and "a bad boy" in a group of gentler children who prefer small-muscle activities. A child who does not like music and has no ability with it may find himself a misfit in a group of children who really enjoy music and, therefore, spend considerable time with it.

A good deal also depends upon the *patterns of behavior and feeling in the group*. Some groups are dominantly gentle and sympathetic, stopping play to attend to an injured member. Most gang-age groups are sarcastic and intolerant of "cry-babies," thus helping a too soft child to become somewhat more robust in the face of pain. Some groups place a great premium upon defiance of adults, calling anyone who complies with adult authority "chicken." Other groups, although not timid, accept cooperation with adult authority as a matter of course.

To what extent the *quantity and variety of equipment* promotes or retards socialization seems still a

matter of dispute. Some studies report that more equipment stimulates children to more action and hence more contacts with each other. Other studies report that less equipment makes children more dependent upon one another, thereby stimulating social contacts. The differences are probably due to a lack of agreement on basic setup. It seems reasonable that groups of children on crowded playgrounds devoid of equipment or in bare gymnasiums might be greatly stimulated to socialization by introduction of a ball or two. On the other hand, playgrounds and schoolrooms heavily loaded with swings, slides, clay, easels and paints and other equipment that stimulate children to busy themselves by themselves may find that removal of some of these will stimulate more group activities. Doubtless the answer to the effect of equipment upon conflict or cooperation within any given group lies in what the equipment is as well as in how much there is of it.

The *quality of adult leadership* is also important to the determination of conflict or cooperation within the group, some leaders being gifted in ability to stimulate cooperative behavior, others thinking they are thus gifted because they can dominate the situation by force or the implication of force in such a way that they keep the children quiet. Lippitt and White, in a study of leadership and group life (1958), found two distinct reactions to authoritarian adult leadership. Some clubs under such leadership respond with a dependent leaning on the adult leader and show little capacity for initiating group action. Other clubs respond with considerable demonstration of frustration and some degree of channelized aggression toward the leader. Expressions of irritability and aggressiveness toward fellow club members occurred more frequently when the adult leader was either of the authoritarian or of the laissez-faire rather than of the democratic type. In the democratic and laissez-faire situations there were more requests for attention from fellow club members to each other than in the authoritarian climates. The authors conclude that child members depend upon each other to a great extent for social recognition and are more ready to give recognition to each other in the democratic and laissez-faire situations.

Development of Cooperation and Friendship. Fortunately, the urge to cooperate is as innate as the urge to compete. Just as conflict and competition seem inherent in the nature of peer groups, so also does cooperation. Even during the period of "sex separation" in play, cooperation on projects is enjoyable, as can be seen in Figure 85. This is encouraging to the teacher or group worker, since it is the basis for constructive development through group activity. As we have seen above, it is, in fact, partly through conflict that the nature of cooperation is made clear to children. There is, however, also an element of pure spontaneity in much of the cooperation children give one another. They imitate each other as early as 15 or 18 months of age. They play in a loose group, in parallel or independent but nevertheless imitative play, as early as 2 years. In fact, this liking to play near another child, doing what he is doing, even though each child does it independently, is a preferred form of play for many 2 and early 3 year olds. Children of 3 to 5 love to look at things together or to hear a story together. They begin to like specific companions for the sheer sake of companionship. Around 4 they play in the shifting group formation, even though no adult urges them to or even sets the stage for such play. By 5 or 6 years, if children have had an opportunity to play with other children, rather closely woven play of an organized group develops, again with no urging from adults. From 8 or 10

FIGURE 85. Cooperation on projects is enjoyable. (Courtesy of H. Armstrong Roberts.)

years to adolescence most children find and join peer groups quite apart from adult urging and often in defiance of adult discouragement. This all comes about quite spontaneously, the urge to be with others and to cooperate with them seeming thoroughly natural.

Cooperation of a high type, however, does not spring full blown into mature existence. It must be learned. But it must not be forced. Many parents and teachers are overanxious about "getting along nicely with one's little playmates." During the stage of parallel and shifting group play children wander off into their own pursuits in a manner which might be regarded by the not too understanding adult as discourtesy to each other. Contacts at this stage, usually ages 2 to 4 or 5, are typically brief and somewhat egocentric. In the shifting group and in the early stages of more closely organized group activity (usually from 5 to 10 or 12 years of age) young egos are strong and not too well controlled; social techniques are amateurish and full of rough edges. Quarreling is frequent and often violent. Children should not, of course, be allowed to hurt each other seriously, but they should be left free of adult interference in order to work out their own techniques of getting along together. Wise adult guidance and some help in seeing that opportunities in space and equipment are available will help to speed the process, as we see in Figure 86; continued adult interference can only stifle it.

The usual and desirable developmental picture is one of increasing self-control on the part of individual children, of increasingly smooth social or play techniques, and of an emergence at adolescence or early adulthood of higher forms of cooperation. The adolescent should continue to

learn better and better how to "take it" in group activity, should develop an improved self-control, and should gain further insight into the needs and wishes of others.

Factors Influencing Friendship Choices. Marshall and McCandless (1957), in a study of preschool children in the University of Iowa's Child Welfare Research Station's Laboratory Preschool, found an over-all negative relation between popularity with peers and dependence upon adults, girls being more dependent than boys. In 1961, McCandless studied the reason for this, the study being done with Hawaiian preschool children, some of whom were Caucasian and some non-Caucasian, but among whom the culture pattern was sociability and freedom of interchange. They found corroboration for the 1957 study that popularity and emotional dependence were negatively related, and that there was as much difference between the sexes as had been found in Iowa.

Smith and Smith (1963) studied the play choices of 1900 children, grades three to six, in twelve midwestern townships. The results indicated that girls were more responsive to the items on the inventory used than were boys and that girls showed an increasing interest in masculine items throughout these grades, particularly between the third and fourth grades.

A factor influencing friendship choices in a study of fifth and sixth grade children was found to be anxiety, the anxious children being less popular than less anxious children (Horowitz, 1962).

De Jung (1963) studied expected reciprocity in social rating procedure as one aspect of social rating behavior

FIGURE 86. The right setting encourages cooperation. (Courtesy of The Merrill-Palmer Institute.)

in children grades five through twelve. He found increasing expected reciprocity with increasing grade placement; at all eighth grade levels the girls' expected reciprocity scores were higher than those of boys. As children grow older they tend to expect to be rated by others about as they themselves rate others, the girls tending to do this somewhat more than boys.

In discussing friendship choice, Albert (1962) says that the social structure defines for the persons involved in it the number, and, in some degree, the characteristics of those other persons who are potentially meaningful and able to become involved with an individual. Social structure places "binds" on the various kinds of behavior that a specific individual may undertake in order to satisfy his various motives.

Leadership in peer groups or highly organized play groups is affected by age, social status, intelligence and school marks, since the children of obvious ability and prestige seem to sustain the role of leadership. Whereas Hollingworth found (in 1936) that extremely superior children were not chosen as leaders by average children as often as were moderately superior children, Smith (1962) found that today "in an era when nations are engaged in the race toward scientific superiority and the exploration of space, individuals with special talents and abilities are once again obtaining greater social acceptance. . . . If there was previously a tendency to de-value the gifted, now the halo threatens to encompass all areas of their behavior. If they were once regarded as abnormal in personal and social adjustment, now the trend is toward overestimating their adjustment capacities."

Children who are genuine leaders must have some self-discipline, some grasp of abstraction and recognition of social ideals, some awareness of other personalities, ability to pursue objectives consistently and to subordinate immediate to more remote goals. These are seldom developed before the age of 9 or 10, so that full-fledged leaders are seldom found among children younger than this. Certainly, some of the important lessons to be learned in the peer group are self-control, how to get along with other people by developing sympathy, tolerance and understanding to replace the boisterousness, loud language, bullying and bidding for attention which characterize the 6 to 8 year old child. Peck and Havighurst (1960) found that the guide lines of character formation are probably laid down in the family and are seldom disrupted by peer group experience. On the other hand, particularly in the case of some children from chaotic, unloving families, it seems probable that the peer group might be used as a constructive force, especially if it operates under the skillful guidance of interested adults.

Individual Differences. We have, in our culture, a general feeling that the child from 6 or 8 to puberty who does not "socialize" or seek a group of peers is somehow a problem child. The child who likes to spend considerable time by himself, reading, building, or otherwise entertaining himself, is likely to be considered a social deviate, a child who is failing to grow normally. Although there is little doubt that good adult adjustment to the business and social world as we know it depends heavily upon skills with people, and although we can see clearly as we watch child growth that many of the most valuable of the lessons on how to get along with people are learned through peer group experience, it seems evident that too much time spent in play is just as unwholesome as too little.

Recall that not all children of any given chronological age are of the same developmental age. Some of them do not fit into available groups

of peers, and this produces a whole set of problems for such children. Any child who dislikes sports or is not skillful in them, who lacks courage or is sensitive, may be ostracized by the only available group of peers. This may produce bitterness in the child who is made to feel by parents or teachers that he has somehow failed them in failing to find popularity in a peer group. Such children sometimes suffer deep feelings of inferiority and may become moody or retreat into fantasies or other undesirable emotional behavior. As we saw above, many gifted, charming-to-know children fail to find congenial companionship in the available peer groups. The most fortunate of the non-gang children, however, usually find one or two congenial friends, and in these friendships have not only companionship and freedom from loneliness but also an opportunity to learn many of the lessons of give and take, of sympathy, self-control and tolerance which serve them well in adulthood. Some of the too socially successful children find in peer group activities so much satisfaction that they develop no other academic or creative interests and, therefore, remain in an immature stage of social development for the rest of their lives. Such people are those who know no recreation apart from night club, movie or ball game, who have few inner resources, no greater command of the techniques for getting along with people than are characteristic of school-age children. Apparently, in socializing with peer groups during the school age, the motto "enough but not too much" seems to apply.

There are certain *sex differences* in the way social interaction takes place. It takes place between boys who complement each other in strength or weakness of personality, leadership or followership, and social acceptability in a specific situation other than friendship. Social interaction between girls, on the other hand, is based more on similarity than on difference of attitudes. The complementary characteristics here are in the area of adaptability, affective as well as intellectual, with community in social-behavioral traits and peer status (Hilkevitch, 1960).

Fitting the Child to the Group. Association with the "right" peer group is often a problem to parents and teachers. It is well known that gangs made up of a majority of wrong-standard children will do many destructive things which any of the individual children would not have thought to do alone, thus setting a bad pattern for individual children, or often getting otherwise harmless children into real trouble. It is equally true that a peer group made up of a strong majority of "right-minded" children can prove a thoroughly wholesome influence on "wrong-minded" children. Parents and teachers, therefore, often attempt to do considerable shifting of children from one group to another, not only to remove an individual child from a bad group to a good one but, often, to get him into any group at all that will accept him.

Just how much we should shift a child from one group to another in an attempt to find the group in which he will function most easily is open to question. Some parents keep shifting a child from school to school in an attempt to find some group of children or some teacher who will "understand" him. This only encourages such a child to think that all the adjustment between himself and a group should come from the group and none from him, or that a school situation can be found that will exactly fit him as he is. Even though every clinician and worker with children knows that sometimes the type of group or school is not one to which a given child

should be asked to adjust, he also knows that to ask no adjustment on the part of the child to group or school is to allow him to develop an entirely false idea of what to expect from life. Every child, in order to benefit from a group or a school, needs to feel at least somewhat equal to the situation, to feel some hope of achieving status on the basis of his own capacities. A hopeless situation means inevitable defeat and discouragement, both of which are destructive to personal and social growth. Children should be moved out of a too hopeless, too discouraging situation. However, there seems an evident necessity for workers with children to discover ways of giving children ample confidence in any reasonable situation, partly because we cannot always change children from one group or school to another, partly because we cannot always change group situations to fit the needs and capacities of every child in a group, and partly because life in his adult years will ask much from him in the way of adjustment to situations as he finds them.

How young people accept each other and discover the best ways to manage their friendships and personal relationships is dependent upon their general background of self-control, their training in consideration for the needs and wishes of others, their own individual conception of the masculine or feminine roles in life, and their general level of psychosexual development.

Friendships and personal relationships in adolescence take on an emotional tone that probably reflects the sexual development so important at this age. At the same time that the adolescent declares his independence of adult standards and controls, he is actually very dependent upon conformity with his peer group. His keenest interest, once adolescence is well established, is in boy-girl friendships. This accompanies rapid progress in his psychosexual development, so we shall turn in the next chapter to a review of this aspect of growth.

EXPERIENCES TO VITALIZE CLASSWORK

1. a. Observe a group of preschool children. What evidences of conflict do you find? What types of cooperation are in evidence? What part does any adult who is present play in either type of behavior?

   b. Do the same for a group between 6 and 12 years of age.

   c. Also for a group 15 to 18 years of age.

2. Select some child who is a problem because of too aggressive behavior. Find out as much as you can about what situations call out this behavior. Find out as much as you can about the satisfactions and frustrations of the child's present life; also his life in earlier years. Can you explain his behavior? What, if anything, can or should be done about it?

3. Select some child who is a leader and outstandingly popular with both adults and children. Observe him in the classroom and in free play. Is his popularity based on sound work and cooperation or is it a product of charming bids for attention? What can you find out as the causes of his present behavior and personality?

4. Recall your own childhood. Can you trace the steps of your own social and personality development? What do you think you can do now to further improve your social adjustment?

5. Select members of the class to read and report to the class articles from the readings below. Discuss these in terms of the content of this chapter.

SELECTED READINGS

Crow, L. D., and Crow, A.: Readings in Child and Adolescent Psychology. New York, David McKay Co., Inc., 1961. Chapter 12, Adolescence during the Middle Ages and Early Modern Times.

Dulany, D. E., Jr. (ed.): Contributions to Modern Psychology. New York, Oxford University Press, 1958. Selection 18, The Reinforcement of Cooperation Between Children.

Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958. Selections 25, Intrapersonal Factors in Delinquency; and 26, Gang Membership and Juvenile Misconduct.

Walters, S. A., and O'Hara, S. K.: Persons and Personality. New York, Appleton-Century-Crofts, Inc., 1953, Chapter 19.

DEVELOPMENT OF MORAL CHARACTER

The Nature of Character. Peck and Havighurst (1960), after a longitudinal study of the nature and development of character, concluded: "There does seem to be such a thing as individual character: a persisting pattern of attitudes and motives which produce a rather predictable kind and quality of moral behavior." They add: "To be sure, there are some inconsistencies within the moral character of just about everyone. Some individuals are markedly inconsistent—now considerate, now callously selfish; responsible here, irresponsible there. Such a pattern has its own kind of 'consistency,' though. It is an enduring, predictable kind of pattern that sets the person off from other people of different character."

AS A BY-PRODUCT OF MANY OTHER DEVELOPMENTS. Peck and Havighurst go on to say: "Character can be regarded as a special aspect of personality; or, otherwise stated, as a function of certain personality characteristics." They list six aspects of personality as relevant: moral stability, ego strength, superego strength, spontaneity, friendliness, and a hostility-guilt complex.

We suggest that a large part of that mature balance of judgment that accepts responsibility for oneself and others, that sees individual rights in clear perspective with the rights of others, that sees the relationship of

one's own present behavior to one's own future well-being can be called moral character. It is made up of all those self-controls, awareness of self, skill and insight into others, reactions to the authority of parents, of church or of cultural mores that we have been discussing. The child gradually accepts group codes; his ability to adjust his own selfish, impulsive behavior to these restrictions grows as his conscience grows. Moral behavior is, in many senses, a by-product of his general social experience.

Basic to good moral growth are: (1) As good physical health as possible. As a rule, children who are strong have more courage to stand on their own feet and to resist temptation. (2) Emotional security, a sense of being loved and wanted, of companionship and sharing. In this atmosphere the child learns to "love thy neighbor" because he is himself loved; he has no need to compensate for a sense of isolation, no need of bitterness or a revenge motive which so often lies at the root of delinquency. (3) Adequate occupation and avenues for the expression of adventure and excitement along wholesome lines so that he is not driven to being "bad" for excitement or freedom from boredom. (4) Continued discipline in self-control so that he becomes able in increasing measure to curb childish impulses. A warning is needed here that he should not be forced into repressions of natural activities, or be expected to achieve adult control in childhood. This must be an increasing achievement throughout the childhood period. (5) Continually widening social horizons so that he gains a constantly increasing ability to know, to tolerate, to sympathize, to understand, and, therefore, genuinely to consider the rights and privileges of other people. (6) The inspiration (usually provided by religious training) to desire the right strongly enough to find sincere satisfaction in doing it.

As we have seen in the development of the self, the child's first conception of what is *right* or *wrong* is simply that which his parents permit or forbid. He is governed in early childhood by what Piaget (1948) refers to as *moral realism* in which the world is exactly what it seems to be; there are no points of view; there is no relativity; things are black or white, wrong or right. As nearly as the young child sees, parents know everything; therefore, what they say or think is right *is* right. Punishment, according to the conception of the primary school child, should be meted out in terms of the amount of damage done rather than in terms of possible mitigating circumstances. Authority is absolute.

Fitting Rules to Circumstances. McDonald (1963) asked 472 children, from a wide range of socioeconomic, intellectual and age differences, to judge which of two actions, stealing from an individual or from a corporate owner, was more reprehensible, and why. These two kinds of theft were described to the children in pairs of stories in which the value of the object taken was comparable and the motivations for theft were identical. Fifty per cent of the children judged that both actions were equally serious because both were stealing. When the children made a distinction in the relative seriousness of the actions, they judged the more serious action by the presumed effect on the owner, the assumed differences in the value of the objects taken, or the greater possibility of detection of one action. Girls were more likely to evaluate the actions categorically as stealing, and to judge them as equally serious. Boys judged on the value of the objects stolen. It was hypothesized that the child-rearing antecedents that determine the strength of conscience also determine its content when the content is conceptualized as the acquisition of evaluative labeling responses.

Gradually, according to Piaget

(1948), a child learns that rules are not objectively real, but that they are made by people and can be modified to fit circumstance. One child, for example, was sternly taught to come home at once from school. He accepted this rule as absolute and one day ran home through a heavy rain, splashing mud on his clothes. He was punished for his lack of judgment in not waiting at school until the rain was over. He was thoroughly bewildered at the punishment since the only factor that governed his behavior was adherence to a rule which he considered absolute. It is only in a more mature stage of development that the child can see the flexibility of authority situations in terms of the "greater" good which lies behind most rules. Only in the more mature stage can the child see that the rightness of an act lies in carrying out the spirit rather than the letter of the ruling.

Only in a fairly mature stage of development, according to Piaget, is moral judgment "tempered by considerations of equity." In the preliminary stage the child learns to adjust the rule to the spirit of the rule; he sees rules in terms of their use to people, but all people are absolutely equal. Only in the later stage does he grasp the concessions necessary to fulfill real justice: the lame boy can be given a handicap in running; you don't push girls around; you don't strike children who wear glasses.

Piaget's studies were done with children in Switzerland. Durkin (1959, a, b), in studies of children in the United States, agrees in general with Piaget's findings that concepts of justice increase with age. He disagrees with Piaget's finding that acceptance of reciprocity as a justice principle increases with age. Older children in Durkin's studies tended to show concern for possible mitigating factors in the situation being judged. An earlier study in the United States (Lerner, 1937) found that children of 8 to 12 are governed by a double basis for morality. It is, for example, worse to lie to your father than to your mother, not only "because he can punish harder," but also because "your mother is sweeter" or "understands you better." The child in such an instance is governed not only by the fear of punishment but also by the desire not to "let mother down."

The step from absolute acceptance of objective rules to the modification of rules or codes in terms of the people involved is not a simple step. Children do not assimilate the moral rules that are handed down from one generation to another as ready-made principles. Each child must "rework" these principles into something that he can integrate into his own life, in terms of his own individual needs and his own identification with and respect for the other people in his environment. Many moral judgments of children of elementary school age are in conflict with those of their parents or even of the whole cultural group around them. This is because the children have not made the rules thoroughly their own. Preschool and primary school children have a limited capacity to extend their identification with or interest in other people. Their moral judgments are, therefore, largely in terms of the world as seen through their own eyes, or in terms of the prestige and authority of their parents, or later, other adults. As the child's capacity to identify himself with others and to be interested in others grows, his capacity to judge situations on the wider basis develops. He becomes less dependent upon adult authority and, in time, even less dependent upon the majority rule of his peers; he develops the capacity to "judge" situations for himself.

The Balance between Selfishness and Moral Behavior. In specific terms, the child learns about morals or the group mores as, for example, he

learns about honesty, which includes honesty in property, money, time, truthtelling, and so forth, or as he learns about the rights and privileges of others, viz., as he learns self-control and consideration for others. He must learn this self-control and consideration for others through learning that, in the long run, he has a happier time living with others if he curbs himself in favor of the welfare of others. Practically, of course, there is a limit to self-sacrifice in favor of others, since the person who fails to preserve his health and to protect himself sufficiently to keep a balanced frame of mind, soon ends his usefulness to society. Gradually, children must develop a fine sense of balance between what is due oneself and what one owes to others. Sexual morality is grounded upon these other moralities, viz., upon self-control and a fine sense of consideration for others. It also involves a sense of proportion which can postpone immediate pleasure for the sake of a greater future fulfillment.

Step by step children must develop enough control over their primitive or selfish impulses to enable them to live considerately in a group. Repression of desirable emotions and urges, or impossible restriction of any basic urge is not what is meant here. The lesson to be learned is a direction of emotional energy along channels which prove socially useful rather than socially destructive. One of the necessary parts of development of self-control is learning to "resist temptation." Children do not learn this by being protected from all temptation; they learn it only by facing increasingly strong temptations sucessfully. Personal pride in the development of a social and ethical responsibility to others seems to be one way of combining the egotistic and the altruistic impulses. Practice in generosity, in sharing work under circumstances which are fun, in receiving praise, and in the building of a sound reputation for being a dependable person are all effective.

Development of Conscience. Basic to all this is a development of what the psychoanalysts call the super-ego. Mahler (1945) quotes Freud as follows: "Freud described three parts of the total personality; First the *id*, which furnishes the instinctual energy generated by the biological processes of the organism and which is entirely unconscious, secondly, the *ego*, which develops through differentiation and higher organization from the id, and which consists of conscious and unconscious parts, and third, the *super ego*, which represents in the total personality the mores and standards of the parents and our cultural society." In popular language this is conscience, or self-censorship.

CURRENT THEORIES. Martin, W. E. (1960) refers to conscience as "one's social inheritance." Kohlberg (1963) says that current investigators consider morality or conscience to be the set of cultural rules of social action that have been internalized by the individual.

Peck and Havighurst (1960) distinguish four qualitatively different kinds of conscience: the first, most primitive, and least effectual, consists of a collection of harsh, crude "Don'ts." At best, these act in an unthinkingly repressive way. At worst, they are so internally inconsistent or so excessively frustrating that they are impossible to follow. The second kind of conscience is largely a matter of rule conformity, with the main weight of authority still residing in the people around one. The third kind of conscience consists of a firmly organized body of internalized moral rules that maintain their own autonomy. They are not much affected by what other people may say; but neither do they permit themselves to be questioned or tested by rational inquiry. Together, they form the tyrannical neurotic superego first described by Freud. The fourth kind of conscience

is a firm set of internalized moral *principles* that are accessible to rational questioning and testing.

Kohlberg also says that rules can be said to be internalized if they are conformed to in the absence of the situational incentive or sanctions, namely, if conformity is intrinsically motivated. A second criterion of internalization of standards is that of guilt, namely self-punitive and self-critical reactions after transgressions of cultural standards. This approach has been associated with psychoanalytically inspired conceptions of moral development as a process of identification with parental authority, namely, of the conflict-inspired wish to be like the parent.

Bennett (1960) summarizes psychological and psychiatric literature on conscience development as having shown the strength and reliability of the conscience to be directly dependent upon the strength and number of the child's early love relationships. Conscience formation, according to this theory, develops through the child's repeated partial identifications with a loved person that usually occur after he has temporarily withdrawn his love following frustration of his instinctual urges. This identification results in ego changing in order to resemble the loved person; in a sense, the child obtains his independence at a price, namely, he introjects his parents' demands in order to be free of them and of other external controls.

Douvan (1962) points out that in the psychoanalytical view, the boy who has accomplished the oedipal resolution now has an *internal* representation of the parents that he must placate and that serves as a source of reinforcement for his acts. The little girl, on the other hand, continues to look toward the parents as the source of reward and punishment since her identifications (with her parents) are only partial and primitive.

At adolescence this difference between the boy and the girl has a critical significance: *The boy* enters a critical contest with an ego that is reinforced by a strong ally, namely, a strong superego. He has an internal criterion by which he can judge action and behavior; his new values and controls are an individual accomplishment and are judged, at least in part, by individual standards. *The girl*, in contrast to this, meets the rearoused instincts of adolescence with an ego only poorly supported by partial identifications and introjects. She needs to rely heavily on externally imposed standards to help her struggle with the impulses.

Child-rearing Antecedents of Strength of Conscience. Proponents of reinforcement theories of learning consider the child-rearing antecedents of strength of conscience in terms of conditions of reinforcement, while psychoanalysis has stimulated conceptualizations of the child-rearing antecedents of strength of conscience in terms of mechanisms of identification of the child with parental patterns and approval. Kohlberg (1963) says that both of these theories suggest a focus upon "anxiety" or "guilt" as the basic moral motive and upon the inhibition of impulses such as sex, aggression, etc., as the expression of morality. Many studies conceive of the family antecedents of morality in such "superego strength" terms (Aronfreed, 1961 and 1964; Bronfenbrenner, 1961, b; Bandura and Huston, 1961).

The "learning theory" approach to acquisition of morality and conscience formation supposes moral development to be a matter of "good habits," learned through example, teaching and reward; or a matter of "bad habits" that are to be prevented from being practiced–usually accomplished by punishment. Some of the recent research on morality has been influenced by Hull's ideas of learning through conditioning—by, for example, parental reward of "good behavior" and punishment

of "bad behavior." It has been assumed by this school of thought that "moral behavior" learned at home would be generalized to unsupervised situations outside the home.

One writer has suggested that there may be hereditary differences in conditionability in the learning of moral anxiety (Eysenck, 1960). Other writers found that film-mediated models were more effective in modifying subjects' reactions to subsequent frustration than were real-life models (Bandura et al., 1963).

Studies differ in their findings about the relationship of modes of discipline in the home to delinquency on the one hand, or to capacity to resist temptation on the other hand. Glueck and Glueck (1950) and Bandura and Walters (1963) found that more primitive, inconsistent, and unreasoning methods of discipline were used in homes of delinquent than of nondelinquent adolescents.

On the other hand, Peck and Havighurst (1960), after a careful study of the psychology of character formation, concluded that the steady, attractive example of wise and loving parents is the one—indeed, the only—influence that produced children with Rational-Altruistic Morality (the highest form in their categories of levels of morality).

Mowrer (1950) adds another insight on the relationship of parents to the development of morality in children when he says, "If a child were cared for but never disciplined, he would presumably show only developmental identification and would develop skills but no character."

Aronfreed et al. (1963) found that the child's self-critical responses tend to follow training in which clearly understood standards of evaluation had been provided. This finding was interpreted as indicating that the establishment of self-criticism requires only that punishment of transgression have a sufficient verbal and understood context and that it is *not* dependent upon the nurturance or withdrawal of nurturance evident in the behavior of the socializing agent. However, in two experimental studies of resistance to temptation, no relationship between ability to resist temptation and parental discipline patterns was found (Grinder, 1963; Rau, 1963); while Burton et al. (1961) summarize the findings as suggesting that, in general, "techniques do not affect moral behavior directly, as would be expected by 'learning theory,' but affect it indirectly as expected by theories of the parent-child relationship."

Sex Differences in Conscience Development. We have seen certain sex differences in Douvan's discussion of the psychoanalytical theory of conscience development. We now turn to the specific behavioral differences involving actions related to conscience. Kohlberg (1963), having reviewed much of the literature on conscience development, summarized the sex differences as follows:

1. Girls are more conforming to rules and authority than boys.
2. There are no substantial general differences between boys and girls in conformity to internalized moral standards. Few sex differences in resistance to temptation have been found. Where differences in honesty appear, they tend to favor boys, although there appear to be no differences in cheating (Grinder et al., 1963).
3. There are no sex differences in strength of tendency to feel guilt after deviation (Kohlberg, 1963).
4. Boys are more rules- or justice-oriented in their expressions of indignation or sympathy than are girls (Maccoby, 1961).
5. Boys are more willing to accept rules for their own behavior if they themselves enforce these rules on others (Maccoby, 1961).
6. Girls are expected to be, and expect themselves to be, more obedient, more fearful, more affectionate and more dependent (Kohlberg, 1962).

Development of Tolerance. Awareness of social problems per se is a matter of being able to think and feel

past the people *I* know personally. Prejudices can arise, and reflect the attitudes and words and voice tones of the people around the child (Stevenson and Stewart, 1958). A 3 year old is still struggling to grasp the fact that other children in the same social group as himself are people, having parents, homes, interests and feelings like himself.

However, two studies have shown that children as young as 3 or 4 are capable of making discriminations between the physical characteristics of Negroes and whites and that the frequency of differentiation increases with age (Goodman, 1952; Landreth, 1953).

By 6 or 7 the child from a less privileged neighborhood will be thought of in the terms set by the attitudes of parents and other adults. At 8 or 10, however, the child may discover for himself that the child from a different social group is a good person to know and thus widen his social tolerance in spite of the adult pattern. School is another means of developing tolerance. There he learns something of the life and ways of children in other countries and cultures than his own. Tolerance as an abstract principle, not just speaking kindly and thinking kindly of this national group or that socioeconomic class, comes only later, if at all. Like all abstract learnings, however, it comes most clearly to the children who have a sound foundation of repeated specific instances. This, as well as the elementary school children's omnivorous appetite for new facts, is a reason for including the stories and films of children from other lands now widely presented at the elementary school level. Television's presentation of scenes and peoples from other countries is also of assistance in these learnings.

The school, in some instances, may compete with the home in the formation of standards, as may the standards of the child's play group. Movies, radio, television and scout troops all play a part and, in recent years, an increasingly important part, in the formation of the child's moral pattern. The demands of competitive outside forces are making basic cooperation within the family increasingly difficult. Unless confusion of standards is to result, home, school and community must get together, each learning what the other is doing and each, if necessary, conceding points in training to the other.

Beginnings in Moral Growth. These developments must be gradual. But even in early infancy a beginning can be made. An infant, for example, should not be allowed to force others to dance unnecessary attendance upon his whims, since even an infant must begin to learn that the world does not revolve around his wishes and needs.

During the preschool period the child should learn to take much of the burden of his own care, feeding himself, waiting on himself at the toilet, caring for his own playthings. He should also have made a real beginning in doing things for others, little errands for the family, picking up the newspapers or other helpful household duties, thus realizing that he has some responsibility for the happiness and welfare of the family group. In social contacts he should have learned not to snatch toys or strike other children "because they don't like it any better than you would if they did it to you." Taking turns teaches the rights of all. Hearing about other children's mothers and daddies, other children's lives and interests broadens sympathy and understanding. All these experiences break into his "moral realism" and compel a widening of his conceptions and identifications to include others.

Five year old children are sometimes aware of deceit or cheating by others and may begin to try out such deceptions for themselves. Depending upon how these instances of behavior

are handled, the child begins to form favorable or unfavorable ideas of honesty. The child naturally continues to use such methods if they are considered cute or if they are made profitable. If they are condemned and found unprofitable, he abandons them unless his life is too boresome or his emotional needs such that even strong treatment only encourages the wrong behavior.

The Contribution of the School. Upon entering school, children undertake a job which, in many ways, resembles the work they must do as adults. Definite beginnings in a sense of responsibility should have been made at home (Walters et al., 1957). Whether or not they have been made, the child in school must begin to take responsibility if his development is to be normal. His attitude toward work as such, his sense of the worthwhileness of effort, as well as his sharing of school property, his sharing of teacher's time and attention, and his learning to "team" up with his peers are all in the making from the day he enters school. The school age, too, is a period of learning how to accept defeat in games like a sportsman; of learning how to react to failure as a challenge to greater effort; of learning not to cheat in work or play; and of expanding group participation and shared responsibilities. Although most of these lessons are continuing throughout the school years, the first three years in school usually determine the child's attitude toward school and the job of school for the rest of his school life, and perhaps even his attitude toward work for the rest of his work life. There are, of course, instances in which children have failed completely to fit the school's idea of responsibility yet have made brilliant successes of their work lives (Edison was supposedly one), but these are the exception rather than the rule.

A by-product of the attitude of reasonable willingness to do a job that must be done whether you like it or not is the development of honesty in relation to work. False systems of merits and demerits often teach children to work only for artificial ends, or even to achieve an end-result by dishonest means. Most 10 year olds think cheating is wrong and say specifically that they would not cheat, but a few report one or two children who do. Twelve year olds, however, show a very casual attitude toward cheating. Many say they would not cheat, but others say they might if they had to, and quite a few say that they do. At 14 both boys and girls have more to say about cheating than younger children do. The situation in cheating differs from school to school, even from class to class. Some report that "75 to 80 per cent of the kids" cheat; others that the school is run on an honor system and that almost no one cheats. Gesell found that all of the 16 year olds said they would not cheat in any situation, except perhaps examinations. However, there were differences in this, some saying, "Oh, we all cheat in exams," others saying that they knew of no one who cheats.

It is apparent, then, that the friends a child goes with, his classroom code, the nature of school adjustment and the example of his parents are definitely related to his sense of responsibility and his tendencies to be of service. Mills (1958) found that children who decide not to violate a moral standard become more severe in their attitude toward cheating, wheras children who continue to cheat become more tolerant of cheating.

Respect for Property. Sharing of responsibility for property used by all is an excellent lesson not only in responsibility but also in respect for property. One "moral" lesson which every child of early elementary age (6 to 10) seems to have to learn is not to "steal." Scarcely any child of this

age fails to have at least one experience in taking something that does not belong to him. At this age the child's needs are strong; his sense of the limits of ownership is weak. Thus, he is tempted to take, and sometimes does take what he sees and wants, regardless of who owns it. Especially likely is the confiscation of such public and "not somebody's" property as school chalk or pencils or paper. The 8 year old *needs* what he wants. If not provided for him, he may take money, which is now meaningful in terms of what it will buy. Apparently, at least one experience in taking what does not belong to them is necessary to teach all but a small minority of children the requisite self-control in the face of temptation.

This "stealing" is most often in the form of taking money from the parental purse. Children see their parents shop, exchanging the magic coins for things desired. Children are usually given occasional coins with which to effect the exchange for coveted objects. These coins come from the family purse. The occasion almost inevitably arises when the child, more than half aware that he should not, takes a coin or several coins from this seemingly inexhaustible source. He usually sneaks behind people's backs in doing this because he has usually been forbidden the amount that he desires. Often, however, the taking is purely an unexpected chance to do it. As a rule, these coins burn the child's pocket because he realizes that they should not be there. In this case, they are spent at the first opportunity for chance objects rather than for something long coveted.

Probably the most effective way to deal with this is to explain where the family money comes from, that there is only so much of it, that it must go for food, clothes, rent, and the like, that, although mother and father seem to have no end to what they spend, most of what they spend is for the family. Therefore, no one in the family is free to take money for special things unless everybody understands; otherwise there may not be enough money for necessary things. Most children do not know these simple facts about family finance. The first misappropriation of money may be the time to teach them.

Calling the child a thief and announcing that he cannot now be trusted is the last thing that should happen. Children's reputations for honest dealing should be carefully created and consistently maintained. This does not mean that a gullible adult should let a child "put anything over." It does mean, however, that the quickest way to make a thief of a child is to give him that reputation so that he will conclude that he "may as well have the game as the name."

Stealing from the family purse is, in many ways, the same as stealing chalk from school. The purse belongs to everyone and, therefore, not to anyone specifically in the child's mind; the chalk and other school property is no one's because it is everyone's. Lessons in "mine" and "thine" learned so painstakingly in the preschool period are not effective when property held in common is concerned. An understanding that property owned or used by everyone belongs to everyone, rather than to no one, is a definite next step in learning about property rights. Some people never learn it, as is evidenced by careless use of public parks, school property and city streets. Protection of property held or used in common, and respect for it as shown by caring for it as if it were one's own, is a rather advanced stage of "property morality."

The first stealing offenses of children from 5 to 10 should be regarded as "mistakes." "It was there. It was not yours. You made a mistake and

took it. We'll return it"; or, "We'll pay for it." This should not be done, however, with money lightly given by an adult to the child, but with money from the child's allowance or from money which he earns. Some children need second or third experiences in order to clarify the fact that even though the object is very tempting, one's hand does *not* reach out for it. To make a shy child go through the process of returning an object to the clerk of the store, if that is where the object was taken, may be to subject him to a too painful emotional experience.

Most children whose growth of conscience is progressing satisfactorily learn that the pain of a guilty conscience is too sharp to be agreeable. The memory of it simply checks any future temptation. Such children have an adequate, occasionally a too burdensome, conscience. Other children are more "hard-boiled." They need pain from external situations because the pain of conscience is inadequate to prove a future check. These children should "face the music" of returning things. A rare child needs to replace something before his classmates; but such public discipline is almost without exception unwise, and the teacher who protects a child from public censure, making it possible for him to restore the property or rectify his error in private, often wins a loyal friend. Real understanding of a child's situation under such circumstances usually seals a pact between the child and such an adult—a pact which serves to strengthen moral behavior of that child for the rest of his life.

Continued stealing, of course, requires special attention since it indicates that something is basically wrong. It is only the first two or three offenses that can be considered in the category of learning lessons about property. The great majority of children need only two or three repetitions of property-rights lessons in order to learn the necessary judgment and control. Offenses repeated through a long period of time indicate either that the development of conscience is defective, that more basic lessons in self-control are needed, or that the stealing is satisfying some deep emotional need. Particularly in the latter case, professional help is needed and should be sought.

Occasional children steal because of dire physical need, as the diabetic child steals sugar. Occasional children steal because they are taught to or expected to. Some steal to gain attention or fame, as did one child who became famous as the best thief of mentholatum balm in a large city. Such children need to find fame, or status, and excitement in more wholesome ways. Some children steal, as we have said above, to fulfill deep-lying emotional needs or because of unfortunate emotional conditionings that accompany stealing (Healy and Bronner, 1952). They may steal to revenge themselves on parents or companions or because of buried conflicts and tensions that are relieved by the act. Such children should have the help of specially trained guidance workers. Most children who continue to steal, however, do so to gratify desires; they are too weak to resist, or too spoiled to think they *should* resist anything they see that they want. These children also need help.

Differences in Temptation. Any adult who wishes to help children with learning about property rights in these early elementary-age experiences must realize that temptation differs for different children in the same situation, or for the same child in different situations. If the adult himself is to demonstrate what we have discussed earlier as mature moral judgment, he must deal with children in terms of circumstance, strength of the temptation and child's motive.

For example, there is evidence that the temptation to steal is greater for underprivileged children, on the one hand, because they have less, and greater for overprivileged children, on the other hand, because they are spoiled and have developed less strength of self-control than have middle-class children.

It is more difficult for children of underprivileged homes to learn property rights than for children of average homes. Because of the lack of individual towels, drawer space, playthings, even clothing, the child has little opportunity to get a clear-cut conception of "mine" and "thine." Every child must learn this sense of possession and also the difficult lesson of keeping his hands off those things that belong to others. But circumstance makes the lesson much harder for underprivileged children. Schools have an obligation to the underprivileged child to sharpen his sense of "mine" and "thine," to develop the feeling of personal property owned and cherished by each of us—"the book I use this year," "the pencil which is mine," etc.

Overprivileged children are also handicapped in learning about property rights because: (1) They have so many things that the value of any one thing remains at a minimum. When possessions are abundant the keen feeling of cherishing any given thing may remain undeveloped; loss or damage carries no genuine pain because replacement is too easy. Like the underprivileged child, but from another cause, the privileged child finds it difficult to develop the sense of guilt that should be felt when one damages or appropriates the possessions of another.

(2) Privileged children have so many things and are likely to be waited upon and indulged so much that they do not develop self-control. Self-control is necessary if one is to keep one's hands off something that belongs to another, no matter how much one may want it for oneself. When there are few lessons in self-control and few opportunities to exert genuine effort anywhere in one's life, the ability to resist temptation remains undeveloped. Most private schools dealing with overprivileged children find it necessary to emphasize the importance of caring for property and to give definite training in effort and self-control so that these children will be able to resist the urge to appropriate what does not belong to them and to be careless with their own and the school's possessions.

(3) Some stealing on the part of overprivileged children, especially the stealing of automobiles by adolescent boys, can be traced to another factor inherent in the lives and training of these children. Overprivileged children have an exciting, gratified life. They have many planned surprises, extravagant gifts, much concentrated excitement and fun. For some of these children the appetite for excitement becomes overdeveloped while, at the same time, the means of arousing excitement become exhausted. Fortunately, many parents and teachers of privileged children recognize this danger and manage to build self-control and respect for property and law, while at the same time they contrive to distribute the thrills so that the appetite does not become abnormal nor the possibility of fulfillment impossible as the years pass.

Learning about Truth. Just as children must learn "mine" and "thine" in property rights as a step in mastering clear notions about our group mores concerning material possessions, so must they lay foundations for consistent truthtelling. Children lie for a variety of reasons. One, in the preschool years, is that children of this age confuse real and imagined situa-

tions. Many of the preschool child's compromises with the truth are due to his genuine inability to discriminate between what happened and what he imagined as happening. (Recall the discussion on development of imagination, Chapter 10.) Many children lie because, although truth is more obvious than falsehood, they observe that adults and other children sometimes lie. When parents consciously or unconsciously lie to others or to the child, they can expect him to follow their example. Lying is a natural sequence of stealing or other misbehavior. Many children lie to avoid punishment, especially if punishments given are oversevere. Parents and teachers, when discovering a child doing this, should evaluate the severity of the punishments they are using with him. If the punishment is too severe, it should be modified. If, however, it is found to be reasonable, the child may need to learn more courage. Occasional children simply stumble by chance upon the possibility of lying rather than telling the truth. Every child requires certain experiences with untruth in order to clarify his idea of what truth is and why one clings to it. Probably no school-age child escapes some sort of experiment with truthtelling.

As in children's experiments with property rights, it is important to deal wisely with experiments in truthtelling. Jumping too quickly into accusations of "You're lying—now I can never trust your word again," leaves as serious consequences as the accusation "thief." Nothing promotes lying faster than to feel that one has no reputation for truth. However, standards for truthtelling must be maintained. The child must appreciate the seriousness of lies and must understand that truth alone is expected from him.

Teasing and Bullying. Teasing and bullying are another type of behavior characteristic of many children in the elementary school age that must be dealt with wisely if the moral development of such children is to be desirable. Preschool children often whine or tease their parents to gain some end. Adults should make sure that such teasing and whining profits the child nothing, and should, whenever possible, give him whatever he asks for politely. Among school-age children teasing and bullying of other children may result from the example of adults or peers. Occasionally, it is due to illness or fatigue which "sours" the child's disposition. Often it is simply the danger signal of idleness. Much of what seems to be cruelty to animals or to other children may simply be curiosity or experimentation with things or with standards when more constructive occupation is lacking. Bullying may also be caused by jealousy or may serve as a compensation for feelings of inferiority. In any case, a child who persistently "picks on" or bullies younger or weaker children needs special attention from guidance experts.

OTHER ASPECTS OF MORAL DEVELOPMENT

Children from 9 years of age can make excellent progress in reasoning, sympathy, esthetic sense, tolerant love and true morality (Cole, 1959). They can learn to regard the truth, to be fair, to understand justice in more than elementary ways. With adolescence all of these concepts come to have deeper meaning as the abstractions behind most rules and principles come to be understood, and as awakened interest in other people enriches the child's feeling for the rights and feelings of others. The normally developing adolescent assumes increasing responsibility for himself, for his school job, and for participating in his school and community activities. Even though in

many communities school programs, extracurricular activities and increased social interests take the time of the adolescent to an extent that leads many parents to assume all household responsibilities in order to free the child, the need for an adolescent to be aware of his responsibilities to his home should somehow be met. Responsibility for the selection and care of his own clothing, for taking even a small part in the preparation of food and in dishwashing, for assuming the care of his own room seem the minimum if he is to realize anything of what he owes to his family for his maintenance and school tuition. Instead of coming to assume that the world owes him a living, he must somehow learn to "earn" his living, if only by doing well the school job for which his parents continue to support him. The average adolescent's need to think for himself and, therefore, to break from parental domination too often becomes confused with the assumption that he owes his parents nothing. When this happens, he frequently feels that he has a right to do as he pleases, being quite lacking in any realization of or appreciation for the fact that as long as his parents pay his bills they have some right to dictate his behavior. Failure to appreciate this shows immaturity in "moral judgment."

Effect of Adult Moralizing. Many adults attempt to deal with stealing, lying, cruelty and bullying by constant moralizing. They read no story to the child without pointing out the moral. "Good" children, they moralize, win rewards; "bad" children suffer awful consequences. Some children learn to hate stories and reading because no story is left a good tale in itself but must be used by the overconscientious adult as a moral. Other children, as a result of such treatment, become compulsive in their incessant self-questioning as to whether they did right or wrong, were good or bad. Occasional children worry themselves into a serious emotional state because they react with too conscientious self-questioning and an overacute sense of guilt. Most healthy children, however, learn to disregard such moralizing by negative adaptation. It is like the ticking of a clock, and they become so accustomed to it that they no longer hear it. In any case, moralizing when overdone has negative or harmful consequences.

The problem seems to be to teach children a sense of honor within themselves without fear of police or outside forces, yet to avoid the instilling of superstitious fears or a superconscientious overanalysis of every item of their own behavior. Good religious training helps children to accomplish this. However, "hell-fire and damnation" doctrines usually either captivate aggressive children (who give full play to such ideas in imagination, yet change their behavior very little) or worry some children to the extent that they may react with nervous or unstable emotional behavior. The real objectives for the teaching of morality are (1) to help children find the richness of sharing, of "loving thy neighbor," and (2) to bring about "peace within" which comes from "the good life"—to teach, in other words, that "imperfection is uncomfortable in the face of perfection" (Cruze, 1953).

For modern city-bred children moral maturing becomes complicated by certain of our present cultural impacts. Landis (1952) expresses this as follows:

> The experience of collecting and reading more than a thousand autobiographies of college students, mostly freshmen, and of watching the course of life on a college campus has developed a *conviction that the youth of today has faced more moral alternatives by the time he is twenty years of age than his grandparents faced in a lifetime.*
>
> Three influences create conditions that underlie problems of moral choice and make

them of pre-eminent concern in the experience of the adolescent:

1. Movement is so prominent in our society that most young folk leave the neighborhood and family group early in life.

2. Change has been so rapid in all phases of experience that well-defined moral standards no longer exist; parents are often so uncertain in matters of the rightness and wrongness of specific acts that their teaching of moral precepts often either is neglected or lacks positiveness.

3. Many adolescent-youth groups exist in our society in which the codes of the new generation hold sway, there being relatively little chaperonage by adult codes.

Each of these conditions is in a very real sense modern and primarily a product of city life. These three influences—mobility, change, and self-sufficient youth groups—are the external circumstances that bear most directly upon problems of moral choice.

Our observations have led us to conclude that it is difficult for young people to appreciate that the thrill of a moment can scarcely be worth a lifetime of regret—whether this thrill be that of fast driving, or the danger of driving after drinking. To cripple oneself for life, or to leave a beautiful girl with facial and body burns is a high price to pay for a speeding thrill. So, too, an unwanted child and a forced marriage, which too often cuts off the education of the pair involved, is a lifelong handicap, and a high price to pay for unwise sexual behavior.

Adolescence should normally be a period of rapid expansion in ability to cooperate smoothly with others, in appreciation of justice and fair play, and in loyalty to associates and to "the rules of the game." Self-improvement is usually rapid and much of its direction is toward finer and more idealized thoughts and behavior. There is, typically, in adolescence a blossoming of idealism, a desire to reform the world, and often willingness to expend great energy in self-sacrifice. The tragedy of our contemporary situation is that this idealism and energy have, outside of war, had so little outlet in action. However, the rapid developments of the atomic and space age are emphasizing the talents of youth during peace as well as war.

PSYCHOSEXUAL DEVELOPMENT

Sexual Morality as Part of Total Morality. One of the sharpest concerns of adults about the "moral" behavior of adolescents is that about sex behavior. This is rightly a matter of concern, since learning to handle the newly awakened sex impulses offers adolescents themselves one of their major problems. What these new longings mean, how to express, and how to control them occupies much of the attention and energy of many adolescents. There are marked individual differences in this, however, as we shall see later.

Since sexual morality is a matter of concern not only to single persons but to partners in any sexual act, and since sexual acts under certain circumstances involve not only production of offspring but the whole structure of family life, society rightly considers sexual morality an important part of total morality. We cannot, however, understand the development of an adequate sexual morality until we understand something of the development of sex itself. Sexual development has two aspects—physical and psychological. Because these two are inextricably interwoven in the individual, we have come to speak of psychosexual development. Reference to the chapter on physical growth will review the strictly physical aspects of sex. We turn now to the more psychological aspects of that development.

The Genesis of Development. At one time the child was considered to be "innocent" of sex or sexual urges until adolescence, at which period in

his life the development of his sexual anatomy, being rapid and clearly evident, led writers to suppose that this was the birth of sex. The work of psychoanalysts and clinical psychologists, however, has led to the conception of infant "sexuality" and has helped to clarify our understanding of the development of sex (Moustakas, 1956; Eissler, 1962). We now know that sex feelings and sex attitudes, although greatly stimulated in adolescence, actually have their roots back in the earliest months of life. With this awareness, our attitude toward sex education has changed. Children are no longer "protected" from sex information, kept "pure" by the lies of stork or doctor's bag as the source of babies, and otherwise led to repress all curiosity about sexual and eliminative functions. Freud found that such suppression in early childhood might, under certain circumstances, lead to neuroses in later life. Sex and elimination need to be dealt with frankly throughout life as natural parts of the life process. Correct names for genital organs and eliminative processes should be taught as naturally as correct names for anything else in life. Evidences of infant sexuality, like curiosity about the child's own body or the bodies of the opposite sex, manipulation of his genital organs, interest in his own eliminative products, should all be dealt with frankly and honestly. Horrocks (1951) says: "Misguided adults tell children that masturbation will stunt their growth, make it impossible ever to adjust to married life, undermine their will, or involve some other severe penalty. Categorically such statements are false and their psychological effects may be vicious." There is much clinical evidence that such treatment of a child or young person leads to feelings of guilt and sometimes to serious psychological maladjustment, and that this, in turn, increases the temptation and drive toward masturbation. Landis et al. (1940) found that 54 per cent of the women they studied reported having masturbated at some time in their lives, and they found no differences between the normal and the psychotic women in the number who had masturbated. For further figures on men as well as women see Kinsey (1948; 1953).

Sexuality in Infancy and Preschool Years. The child's interest in his own body increases rapidly from 6 to 12 months and is a by-product of general curiosity, increasing skill in use of hands, and the birth of self-awareness. This was discussed in Chapter 8. Between 12 and 24 months the child in our American culture usually has a great deal of attention paid to toilet training. This was discussed earlier.

With the great emphasis during these years upon self-care, of which dressing and undressing are important parts, many children find it fun to undress and run about free of clothing. In the 1960's the bikini bathing suit and the young child's version of it have become popular and so much in the news that the acceptance of near nudity lends no particular emphasis to a naked child and, therefore, today, creates no cause for discipline if a child happens to undress himself and to appear naked. The younger the child, the less interested he is in bodies per se and the less self-conscious he is about nudity (Fig. 87).

Sexuality in Elementary School Years. Nearly all children between 5 and 10 encounter some episode or episodes of sex play. Investigation of each other's bodies, handling of each other's genital organs, playing "father and mother" are almost inevitable, unless the child is so overprotected that he meets no other children. Even though a boy has had careful sex education at home and hence knows what his little sister looks like, he has

FIGURE 87. Unself-conscious about nudity. (Courtesy of H. Armstrong Roberts.)

a curiosity to discover if all girls are the same. Or children, in an urge to play adult, not only play other aspects of adult housekeeping, but the father-mother game, too. "Hospital" is always a favorite game; playing that a baby is being born is a natural enlargement on the idea. Children should learn not to play these particular games, and can be helped to participate in other kinds of play. But care should be taken to deal with such situations in a way which will not cause the child to be shamed, to feel ostracized or "nasty," since when these feelings are aroused children may be enticed into continuation of such play for excitement and defiance. If this is not the result, inhibited impulses may cause difficulty in later marital adjustment. Parents sometimes worry about these episodes, thinking that the child must be displaying precocious and, therefore, dangerous sexual development. They have perhaps heard, too, that masturbation or other sexual behavior in childhood will lead to insanity, but there is no evidence that any sexual experience in childhood in itself causes insanity.

Children who persist in sex play after the initial experiences with it, like children who steal after the natural lessons have been taught, evidence by this fact that they need special help in straightening out attitudes toward sex and toward the adult world in general. This is particularly true of

children who persist in sneaky or "dirty" attitudes. However, the great majority of children soon forget sexual episodes if their parents deal quietly and frankly with the reasons why such behavior is undesirable while at the same time giving any sex information that the child seems to need at the moment. It is possible, of course, to be too frank or to be fearful that one is not telling the child enough. Too much of the wrong kind of frankness about sex from misguided parents may lend an abnormal emphasis to the topic that will be reflected in the child's continued preoccupation with it.

Farm children have an easy and natural opportunity to learn about sex and to accept the naturalness of the eliminative processes, since they are exposed to animals and have the responsibility of caring for animals in all fundamental life processes. City children are less fortunate. Summers on farms and possession of such pets as are possible in cities help. Wholesome experiences with animal reproduction do much to keep children's attitudes healthy.

Apart from the sexual experiences that many children have with each other, there are the rarer episodes precipitated upon children by adults or older children. Some older child, or, more often, some perverted adult may subject a child to sex attack or enticement. Either boys or girls may be the subjects of such experiences, particularly in underprivileged neighborhoods where crowding is great and where criminal activities tend to be high. Any child in any neighborhood may, however, have such an experience, either in the city or the country. Although these are fortunately rare, they are of such importance to the child's later development when they do occur that we cannot neglect them here.

Far more important than the experience itself is the way in which it is handled when it becomes known. Even in instances of cruel and thoroughly frightening attack, proper handling can bring the child through with a minimum of psychological scar. Landis, (1952) says that making a trauma or permanent psychological wound of early sex attack or experience is disastrous. Overwarning or anxiety to prevent such accident or experience is still worse. Often such experiences occur without knowledge of the parent and without trauma to the child then or later in sex life. Children can survive severe psychological experiences and, if the episode is handled wisely, may even be stronger and saner because of the philosophy developed through the experience. Just as a child who has a serious physical illness or accident needs a doctor's care, so can a child who experiences such severe psychological situations as those involved in sexual attack be helped through the care of a psychologist or psychiatrist.

Peer Group Experiences. The peer group performs a certain function in sex development. Children need to learn that ugliness and sordidness exist in sex, as they do in the other moral areas of lying, stealing and profanity. But they need to learn, too, that each individual must build his moral concepts upon a satisfactory basis in spite of this. The occasional experiences with the uglier sides of life that may occur can and should be utilized to give the child a sound sense of the realities so that later, when he no longer has his parents and teachers to lean on, he can face whatever is necessary. Immunity to "wrongdoing" seems for most human beings to be developed only through exposure to temptation and through conquest of it. The person who is "pure" because he has been so protected that he knows nothing of temptation must go through life continually protected if he is to re-

main "pure." The person who really knows how to meet temptation and who can trust his strength is the person who has tested that strength.

Whatever the child's experience with sex, his adolescent and adult life can be normal and fulfilling under only one condition: he must *not* grow up with the feeling that sex and everything connected with it are nasty and dangerous. Many misguided adults make of sex a dangerous dragon which lies in wait to destroy the child. The "we can trust you, but we can't trust your sex impulses" attitude may either fascinate the child or throw him into a panic of fear. The bogy feeling about sex makes of it a demon apart from the child and beyond his control. No child should feel sex to be greater than he is; he should know always that, hard as the struggle may be, *he* can always be the master of what is, after all, only one of his impulses. He must realize to the full extent of his attitudes and feelings that sex under the proper conditions is one of life's greatest fulfillments. He should also have the life-long training in self-control, the life-long development of deep consideration for others that will make it possible to take *his* sex at the time and under the circumstances that will fulfill rather than destroy his life.

Sexuality in Adolescence. Sorenson (1962) has defined adolescence as much more than one rung up the ladder of childhood. It is a built-in, necessary transition for ego development. It is a leave-taking of the dependencies of childhood and a precocious reach for adulthood. Erickson (1962) has said: "In no other stage of the life cycle . . . are the promise of finding oneself and the threat of losing oneself so closely allied." In referring to the impact of contemporary American society upon youth he refers to "this century of turmoil, transition, challenge and danger." He adds that the speed of social change which characterizes our society greatly increases the unpredictability and uncertainty of the life situation shared by all members of any generation. This, in turn, tends to alter the relationship between the generations and to emphasize a new significance for the present, which emphasizes in turn discontinuities between age groups and generations. It makes for stress for parents, but also for the adolescent who experiences major stress because he feels that he lacks a place or role in our society. Keniston (1962) says that today the youth culture transition is characterized by an absence of rationality, a disengagement from adult values, and a belligerently non-adult outlook.

These stresses emphasize the need for helping the young adolescent to concentrate his energies in areas where he can have responsibility with the authority to act (Coleman, 1961). They also complicate a stage in development when the rapid development of the sexual organs, the appearance of secondary sexual characteristics, and the interest in the opposite sex occur, the "sexual awakening" of adolescence. These evidences of sexuality at adolescence are so marked that, until recently, they have been considered the beginning of sexuality. We now know that the sexual phenomena of adolescence are only a step in a long sequence; they have been preceded by many important physical and psychological growth phenomena that bear directly upon the nature and direction of sexual development at adolescence.

Adolescence must be viewed not only as a biological phenomenon, but as a cultural phenomenon apart from the biological happenings. Broderick and Fowler (1961) have documented the emergence of new norms in the relationship between the sexes. They say that while old patterns of hostility and withdrawal are not dead, new

behaviors and relationships are developing, based on greater understanding and sharing of value orientations. They suggest that if their findings are correct, we may expect more early cross-sex sexual experimentation, an increase in early marriage rates and greater difficulty in finding clearly defined and generally accepted sex roles. This prediction is proving (1964) to be true.

EARLY MARRIAGE. Teen-age marriages are occurring in numbers that indicate a substantial change in boy-girl relationships in recent years. The Population Bulletin (1961) says that the United States has younger brides and grooms at first marriage than any other urban-industrialized country in the world. In 1960 the median age of first marriage for grooms was 22.8 years, and for brides 20.3 years. In 1961 in the United States in 0.3 of 1 per cent of marriages the bride was under 15 years of age. More men married at 21 than at any other age, and more women at 18. This is in contrast to first marriages in 1890, when the median age for men was 26 years, and for women was 22 years. The gap in ages between the spouses in 1890 was 4 years; in 1960 it was 2.5 years. Burchinal (1960), after a study of teen-age marriages, generalizes that from one-third to one-half of all high school girls who marry are premaritally pregnant. He goes on to say that teen-age marriages are generally begun on a meager economic basis and frequently require parental support, the financial pressure being an important factor. Such marriages produce high rates of school dropouts.

A third of all divorces granted to women between the ages of 15 and 54 are granted (1962) to those between 15 and 19 years of age. It is evident that teen-age marriages are unstable to an exceptional degree.

Margaret Mead, the well-known sociologist, has said (1960) that young people who marry in high school or college or who "go steady" through college tend to cling to each other exclusively, take little advantage of college as a broadening experience, and show less breadth of vision as seniors than they did as freshmen. They marry either as undergraduates or immediately upon graduation, have children in quick succession and retire to the suburbs to have more children—bulwarking a choice made before either of them was differentiated as a human being. Help from both sets of parents, begun in the undergraduate marriage or after commencement day, perpetuates their immaturity. At 30 they are still immature and dependent—neither husband nor wife realizing the promise that a different kind of undergraduate life might have enabled each to fulfill.

Macy (1960) comments that 6 per cent of the deaths among 18 and 19 year old girls result from complications of pregnancy. Pekos and Heald (1964) add that this is important, since the teen-age girl's own body is still growing and, if nutrition is deficient, the teen-age girl is a poor obstetrical risk.

INDIVIDUAL DIFFERENCES. We cannot deal intelligently with adolescent sexuality, however, unless we understand the wide differences in age of development and in intensity of sexual impulses. The range of age of biological maturation has been discussed in Chapter 7. There is also a wide range of intensity of sexual impulses. Some people have very intense sexual urges; others have little drive in this direction. The scatter along a normal probability curve characteristic of other capacities is applicable here. Most people cluster around a middle tendency, having fairly strong sexual impulses yet finding control of sexual behavior not too difficult.

As we saw in Chapter 7, the average girl menstruates at about 12 to 13 years

of age; the average boy matures at about 14½ or 15 years of age. Some boys and girls mature two or three years earlier than this. If we assume at least an average sex impulse in these early-maturers, it is important to realize that it occurs in them at an earlier age when their social experience, intellectual maturity, self-control and other aspects of moral development are less than those of children who mature at the average age.

We can see several types of young persons emerging here, each with a somewhat different problem in control of sex impulses. One type is the young person of rather late biological maturing, with adequate early training in self-control, with rich sublimatory interests and varied social outlets. For him chastity is not difficult to maintain. If the young person is a person of early biological maturing, and if he possesses also rich sublimations, excellent self-control and wide social outlets with the accompanying self-confidence which these things mean, chastity is possible, although it is in some cases a pressing problem. But if he is of a third type, namely, the early-matured, not too well self-disciplined young person, especially if he is a person for whom social and emotional gratifications in other directions are lacking, chastity is, if not impossible, at least a completely absorbing problem (Landis, 1952; Hubble, 1958).

Counselors should differentiate among these types of young people if they are to be of genuine help. To the first type, sex per se, being only a slight problem and often of not too much interest, "frank" talks about sex problems seem, if not embarrassing, certainly of slight interest, or even irrelevant. To the second type, sex information and some viewpoints on how to utilize wholesome work and recreation to keep sex problems at a minimum are helpful, but great emphasis upon the subject is unnecessary, or may even prove the extra stimulant which makes the problem really acute.

There are unfortunately, also the third types, namely, the highly sexed, not too self-controlled young people who think sex, talk sex, act sex in such a way that they find any other subject uninteresting, any other activity "tame" and babyish. These young people are a problem to themselves and, not infrequently, a menace to their peers. They are the ones who start circles of sex talk and sometimes of sexual activity. They are the ones who often tip the balance for the second type from wholesome preoccupation with varied activity to unwholesome preoccupation with sex ideas and activities. These young people need fearless frankness and strong inspirational guidance.

Skillful guidance people find that one of the most constructive approaches to young people is to help them to see the difference between the physical expression of spiritual or psychological union and mere gratification of physical sex tensions. The one is richly fulfilling if it can take place under conditions which make for physical comfort and complete psychological assurance. The other, mere release of physical tensions, soon becomes a drug which creates its own increasing tensions until, in time, it may become difficult or impossible to release the physical tension.

Most young people who play around with the physical thrills of sex divorced from psychological meaning (viz., a deep and enduring affection) do one of two things. They come to be disgusted with it and abandon it as meaningless and empty, in which case they rob themselves of success in either the physical or the psychological aspects of marriage. Or they become so preoccupied with physical tensions and releases that they may place themselves, in time, in the

position where tensions can no longer be released—with consequent nervous disaster. Most young people of good family and training cannot long play with physical sex alone. The girl who gives her body without love has been deeply conditioned in most cultures of the western world; in time it occurs to her that this is what is meant by prostitution and she gives it up. Girls who have had this experience need careful and constructive help if they are to "recover from" such experience and make a good sexual adjustment in marriage. The boy who encourages girls to such behavior, but who is himself well-conditioned through good sex education, usually soon discovers that sex snatched in the back seat of an automobile does not really relieve physical tensions satisfactorily, nor does it provide the fulfillment that he really wants. Experimentations in physical sex alone seldom last long for young people of sound psychological background.

Sexual expression within the confines of love is quite a different situation. Many guidance people feel that much of the sexual experience of young people outside the bonds of marriage is grounded in the rationalization, or perhaps the reality, that the partners love each other. A high percentage of the premarital sexual experience of girls occurs with the boys they are engaged to and firmly believe they will marry. Under these conditions there is no sense of prostitution, but only a possible guilt feeling or the dread of pregnancy.

In many instances, however, this guilt feeling or this dread proves sufficient to spoil the complete surrender and relaxation necessary to genuinely fulfilling sexual embrace, with the result that a considerable proportion of these seriously-in-love young couples give up the practice. If they give it up with an understanding of the reasons why it is not completely fulfilling, or of why it may even leave highly keyed, ungratified tensions in its wake, they usually modify petting practices and occupy their time together in such a way as to avoid sex tension. In the end these young people may experience a complete and fulfilling marriage. If, however, the young couple give it up under the delusion that because they do not find complete gratification they "are not made for each other," one of two things happens. Either they break their engagement, leaving the girl no longer a virgin, with all the problems our culture has conditioned young people to feel over this situation. Or they marry from a sense of guilt. If they do this, there are certain cases in which the original love asserts itself and the earlier unfortunate conditionings built around the physical sex experience break down, resulting eventually in a complete and satisfying marriage. In many cases, however, the earlier unfortunate conditionings persist, and the marriage is a failure.

SEX EDUCATION

General Principles. INFLUENCE OF THE HOME. The sexual aspect of morality assumes such importance that much has been written about how children should be educated in this particular aspect of their lives. It is generally conceded, as we have seen throughout this book, that such important feelings and attitudes as those concerned with sex are molded at home by parents in a more permanent and deeply rooted manner than can be achieved by any other person or agency in the child's life. In discussing psychosexual development we have referred to methods by which adults should meet the various aspects of psychosexual development, particularly when the child's developing sexuality reaches the surface in overt behavior which comes to adult

attention. Shock or disgust on the part of the adult may leave the child with a sense of guilt, horror, disgust or fear of sex. Continuing self-control, widening sublimatory or socially acceptable expressions for sexual thoughts and feelings, and increasing understanding of what sex is and how it functions are constructive measures to be achieved. All lessons in self-control (without blocking or repression), all growing consideration for others and development of other aspects of moral judgment contribute to sound sex education.

Children should acquire factual knowledge about sex as they have need for it. Proper names for eliminative products, genital organs, the sexual act, menstruation and other sexual realities should be given soon enough to protect children against using "gutter language" or other false substitutes. One of the chief reasons for this is that scientific names are free of the attitudes of nastiness or sneaking or excitement that accompany the "gutter" names. Adolescent children should have some concrete knowledge of the anatomy and physiology of the sexual mechanism of their own sex and of the opposite sex. Without such basic facts the young person is handicapped in his social and emotional experience, being far more likely to make mistakes through ignorance than through knowledge. It should be remembered, however, that possession of factual knowledge is only a minor part of an adequate sex education; proper attitudes and wholesome feelings about this realm of life are vastly more important than facts alone. The ideal, of course, is possession of both facts and well-educated feelings.

Sex Education of Preschool Children. We have already discussed the necessity for dealing with the usual evidences of sexuality in infants and young children in such a manner that harmful feelings do not result. Infants should not continue to manipulate genitals as their interests and manual skills widen beyond their own bodies. If adequate routines and ample play materials are available, exploration of one's own body tends to slip into the background of attention and interest. Questions about where babies come from are natural if a new baby appears in the family or neighborhood, or may stem from a normally inquiring mind that wants to know, "Where did I come from?" These questions deserve an honest answer in simple language. Intelligent preschool children nearly always ask at some time, "What is the difference between boys and girls?" This is a perfectly natural question in a world where people are divided into two obvious groups which dress differently and must be spoken to differently. (Note any 3 year old's difficulty with "him," "her," "he," "she," "Mr.," "Mrs.," "Yes, Ma'am," "Yes, Sir.") These and any other questions should be answered without embarrassment and with complete honesty. Otherwise, they will assume an aura of "different-from-other-questions," with the result that children will wonder and think about them far more than they do questions not singled out by their parents as embarrassing and worth evasive answers. Answered quietly and adequately, they slip into the category of answered questions that can be forgotten about for the time being. Children accurately informed about basic facts of sex have no need to indulge in fantasies about the origin and birth of babies or about the relation of their parents in the sex caress. Only children who are deprived of such knowledge indulge in persistent fantasies centered around sex.

Questions about the origin of babies and differences between boys and girls are, however, only an expression of the child's need to know facts. Far more basic to the child's psycholog-

ical well-being, as we have said, are the attitudes toward sex that he should develop as he grows. By 5 years of age the child should have outgrown infantile masturbation, leaving it behind in the natural course of his development. He should have established regular and acceptable habits of elimination and should have developed satisfactory attitudes toward elimination and eliminative products. He should have accepted and adjusted satisfactorily to younger siblings in his family, having learned to share the love and attention of his parents.

With entrance to school the child inevitably meets other children with all the differences in sex practices and attitudes which any group of children represent. A child with a sound sex education up to this point is not only not likely to be swung aside into undesirable practices and attitudes but may prove a wholesome influence to other children less fortunate than he.

Most writers think that by the time children enter school they should have adequate words for the eliminative processes, should know the true origin of babies, and should be familiar with the differences between boys and girls. Adolescents should understand the facts of menstruation and of nocturnal emissions, the physiology of stimulation to tumescence in both boys and girls, differences in male and female sexual reactions, and other "basic facts."

The School's Responsibility in Sex Education. How much and what kind of sex education (meaning, usually, the limited conception of sex education that deals with facts and knowledge) the high school or college should undertake is a question subject to debate. Even though curiosity about the origin of babies and the anatomical differences between boys and girls is general before 6 years of age, most writers, as we have said, recognize a "latency" period preceding adolescence. Landis (1952) places the first real curiosity about sex between 6 and 9 years of age, with a latency period from 9 to 11, and renewed curiosity at the onset of adolescence. Instruction in the physiology and anatomy of sex occurs in biology or zoology classes in elementary and junior high schools, but the lessons seldom mention the human animal. Schools, as a rule, have assumed that the answers to younger children's questions about sex have been given, or should be given, at home. Gesell found that sex is really interesting to 12 year old boys, who think of it as less dirty than they did earlier. They need and want accurate information to clear up the misconceptions they get. They prefer counselors to parents as a source of information and advice. One thing that can be said for the widespread parent education movement of the past thirty years is that parents now are fairly generally conscious of the need for answering children's questions about sex truthfully and as accurately as possible. Schoolteachers should be similarly equipped to answer simple questions about sex, and should make every effort to follow whatever attitude about the answering of sex questions is dominant in the immediate community. Nothing but confusion can result to children who receive one set of answers in school and a completely (and violently defended) different set at home.

Although schools can make little impression upon the fundamental attitudes and emotional reactions gained at home and in the neighborhood, educators in many school systems feel that schools have a responsibility to do what they can. There seems little disagreement with the belief that, rather than leave children uninformed, as numberless homes still do in spite of the parent education movement, the schools should under-

take the task. Programs in homemaking skills and in marriage and family living are fairly general for girls, while a number of schools include boys in such courses. A study of 4000 high school students in California in 1958 showed that the interest of high school students in marriage and parenthood was significant (Lantagne, 1958). Although girls showed an over-all interest somewhat greater than boys, the boys showed substantial interest. The greatest interest of the boys was in prevention of juvenile delinquency, of the girls in pregnancy problems. Percentage of interest was not altered significantly by religious belief. Courses in psychology or personality development are also increasingly common in high schools. Sex education is sometimes taught as a part of these, or as units in hygiene taught by the biology teacher, the school nurse or doctor. In some schools it is taught by any subject-matter teacher who has the right life philosophy and the right rapport with the young people.

WIDER PERSONAL RELATIONSHIPS

Closely bound up with the sexual aspects of psychosexual development are the more humanitarian impulses of love in its wider sense. Fromm (1956) says: "Love is not primarily a relationship to a specific person; it is an attitude, an orientation which determines the relatedness of a person to the world as a whole, not toward one object of love." He lists the following kinds of love: brotherly love; motherly love (one gives help, the other receives it); erotic love (a craving for complete fusion); self-love; love of God. He adds: "If a person loves one other person and is indifferent to his other fellow men, the attachment is one of enlarged egotism."

There are innumerable personal contacts throughout the life of the child other than the more narrowly sexual or erotic relationships. These wider relationships enrich his sex relationships and are, in turn, influenced by his sex experiences. Combined with the individual's sex experiences they make up his love behavior in its widest sense. Genuine maturity in psychosexual development lies in the capacity to choose a mate wisely, to woo and win this mate, to establish an adequate and satisfactory sexual and psychological marriage relationship, and to accept and rear children. Much of this, as well as of the capacity to love friends and people in general, is the product of growth in love capacity in its widest sense. Let us, then, trace the development of this wider aspect of love.

In Infancy. As has been implied before, a newborn baby knows little about love. People as such do not exist for him. His awareness of life consists largely of consciousness of himself, particularly of his physical self. When he is well-fed, exercised, clean and comfortable, he is content. As was shown earlier in this chapter, he gradually becomes aware of other people and learns to accept those who take care of him. In this sense he has learned to love another person than himself, and he may show his love by permitting only the favored person to wait on him and by rewarding that care with a smile or with cooing sounds. There are some adults who have not progressed beyond this stage, whose entire conception of love is to allow people to wait on them, and who have no more sense of responsibility to other people than to pay them with a smile or a physical caress.

As we saw in Chapter 12, babies should be thus loved and thus served. Healthy babies, loved and cared for, will have a sound foundation laid for adequate adult love relationships. Sickly, unwanted or neglected babies

usually develop a preponderance of negative emotional feelings and thus develop cravings or resentments that color adult love relationships unfavorably.

In Early Childhood. Children of 2 or 3 years have usually passed the stage of selfishness described above and have broadened their conception of love so that they do not demand unlimited service. They should have learned to care for some of their own needs and to perform some degree of service for someone else. They should have made a real beginning in feeling responsible to the family group, in developing ability and willingness to do everything possible in feeding themselves, in keeping their toys in order and in doing occasional errands for other members of the family. They should have broadened personal affection to include not only the mother or nurse who gives physical care but also other members of the family and other persons whom they meet often and who, therefore, become familiar to them. Preference is usually shown, of course, for those persons who provide the best amusement or the greatest amount of praise, as well as for those who give the greatest number of presents. One could scarcely expect a 3 year old child not to be swayed by such advantages. Tragedy may result, however, for the adult who can love only persons who minister to his physical needs, who flatter and praise constantly or who pay the highest material price in the giving of presents. Mates chosen on such a basis are seldom successful; friends chosen on such a plane are likely to be similarly limited in the conception of love and, therefore, not very satisfactory in the long run.

In the preschool years, as we have seen, love and conflict often occur together (Freud, 1946). For example, we can see two children, both good friends yet in conflict over a tricycle. Each will be clinging to the coveted object, each crying, each puzzled at the resistance from the other, each of them clinging to the tricycle with one hand, but patting the crying friend sympathetically with the other hand. Here, each child has progressed far enough in love growth to feel concern at the unhappiness of the other; yet each is still egocentric enough to be blind to the fact that he is causing that unhappiness. Many husbands and wives, full grown chronologically, are only this old in love development, since they live thus concerned at the unhappiness of the other, yet thus blind.

Another far more important foundation for adequate adult love relationships is being laid in the preschool age. The boy's early relationship with his mother sets deeply his later emotional reaction to women. Loved wisely by his mother, a boy can accept fully the love of a wife in later years. Loved wisely by his father, he can develop a clear masculine pattern for his own behavior as a husband and father in adult life. So it is with a girl; in the love of her father she can accept the love of a member of the opposite sex; in the love of her mother she can develop the pattern for her own behavior as a wife and mother in adult life. Loved unwisely by his mother, the boy may either become unwholesomely attached to her in such a way that he can never step beyond his preschool dependence upon her; or, if his personality is strong enough, he may break away in spite of her. He will be lucky if he accomplishes the break without a bitterness which leaves him forever suspicious and fearful of the love of women. The analogy is the same for a girl and her father. If his love is too possessive and jealous, or if their relationship becomes so completely fulfilling for the girl that she cannot later accept a less indulgent and pampering love from men, she

will almost certainly remain unmarried or fail in marriage.

It is in the later preschool period and again in adolescence that the psychoanalytical school attributes considerable importance to the fact of the boy's attachment to his mother and the girl's attachment to her father. However, very closely associated with the period of intense preference for the parent of the opposite sex there is also a period in which the child needs to identify himself with the parent of the same sex. The little boy, for example, imitates his father at around 3 years, the age at which he is normally intensely attached to his mother. Ultimately, the child finds it necessary in his emotional development to incorporate both the father and the mother into his growing ego structure (Horney, 1950).

Gesell found that the mother is usually the favored parent at 3 years of age. He does not mention a sexual difference in this regard. However, at 3½ years girls may propose to the father saying, "I love you." He found that at 4 years some children say they hate their fathers, especially if his being at home cuts them off from mother. He found also at 4 great pride in the mother: the child boasts about her away from home and quotes her as an authority. The mother seems to be the center of the child's world at 5: he (or she) likes to help her, to be near her. Boys may talk of marrying mother. Relations with the father are smooth, pleasant, and undisturbed; excursions with the father are enjoyed; the child is fond and proud of the father and may obey him better than the mother.

In Later Childhood. By the time the child is 6 years old, the mother is no longer the center of his world, though the child is very sensitive to the mother's moods, emotions, and tensions; there are contrary responses to the mother in which the child may say he loves her, then say he hates her; is unwilling to accept help which he needs from the mother; is rude and argumentative toward her. He both fears and admires the father more than the mother, obeys him better, is not rude or resistant toward him; is hurt by a cross word from him. By 7, however, the child is again in harmony with the mother, is easier for her to discipline, is proud and self-conscious about her in public, though there are still occasional strong battles of will between mother and child. At 7 some children, especially boys, "worship" the father, think he is wonderful, have long confidential talks with him. Girls are more sensitive to any reprimand from the father and may be jealous of his attention to the mother. At 8 years of age the child shows strong physical and verbal expressions of admiration and affection for the mother, tries to live up to what she expects of him, may be jealous of the mother and father when they are together. The relationship with the father is less intense, but smoother than with the mother. There are less ardent expressions of affection, and smoother obedience. By 9 the child, being busy and self-centered, has smoother relations with his mother, provided she treats him with respect for his increased maturity; this is also true of the relationship with the father if he respects the new maturity. Boys at this age sometimes enter into a new relationship with the father in which many interests are shared.

As we saw earlier, the peer group teaches lessons that force consideration of others. Group loyalties gradually force a child to curb his most self-centered impulses in favor of group welfare; otherwise, he is ostracized, a fate which no normally growing child can endure. Peer group lessons are usually quite objective and impersonal. Faults are discussed openly; discipline is prompt and re-

lentless. Black eyes and bloody noses are all part of the experience for boys. Coldly turned backs and cruel words serve to whip girls into line. These lessons are more open and more cruel than the lessons that can be taught in the family where parents and older siblings are too fond of the child thus to discipline him. It is fortunate that most children have a strong urge to play with peer groups since, in many instances, if their urge were less strong, they would never tolerate the cold wind of objective discipline but would retreat to the warm bath of parental indulgence and understanding.

Another aspect of the later childhood period that is of some importance to psychological development is the sex-separated play (discussed in Chapter 13) characteristic of the period. Viewed against the rapid fixing of love attitudes in the preschool period and, again, against the rapid development of the adolescent and early adult period, this phase may well be thought of as a latency period, as the psychoanalysts refer to it. The analysts' use of the term "latent" does not mean, however, that sexual interest is nil at this stage but rather that it continues to exist, though in a less obviously growing form. Interest in and curiosity about sex is common in the elementary school period.

Even when play groups are clearly separated into own-sex groups we find a certain clearly expressed awareness of the opposite sex throughout the latency period. A group of boys, for example, will seem to remain absorbed in baseball or football when a group of girls, or a particular girl attractive to a particular boy, goes by. The typical behavior, however, is a little louder yelling, a few "side show" activities, definitely designed to attract the attention of the girls. Similarly, the girls switch their skirts a little more, raise voices, giggle and give clear evidence of their "reactivity" to the boys. Teasing between the sexes is a common bugbear of the elementary school teacher or the parent of 6 to 12 year old children. Calling names, pulling hair, silly rhymes, putting names together on sidewalk or walls are common practices which show that sex awareness is not dead during the gang age. In their preference for their own sex boys show a greater tendency to differentiate along sex lines than do girls in the choice of favorite playmates (Medinnus, 1962).

The Early Adolescent Period. HERO WORSHIP. From 12 or 15 years of age through the next two or three years there is, as we have seen, a time when, if the child is developing normally, he shifts from the less impersonal relationships of the gang to more intense personal relationships. Love becomes a much more emotionally personal thing. Hero worship occurs, often with such complete devotion that the child's personality undergoes important changes in the direction of imitation of the hero. If the hero, real or fictitious, is a good model, the changes are for the better. Habits of personal cleanliness, good attitudes toward work, and real progress toward preparation for vocation or profession may result from the emotional impetus afforded by the desire to emulate a hero.

Adults should guard against jumping to conclusions about what it is that the child "sees" in the hero, since what he really struggles to achieve through the hero may not be at all evident on the surface. Therefore, even when the chosen hero seems all bad to the adult, the wise adult will attempt genuinely to understand what freedom, or what adventure, or what nobility the hero represents *in the child's eyes.* This is extremely important, since we can be of no use to the young person in guiding him to a fulfillment of himself

along socially acceptable lines unless we know how the world looks to him and what he is trying to achieve in his early adolescent striving to fulfill himself as a person and as a sex member (man or woman).

INTENSE FRIENDSHIPS. Another aspect of early adolescent development is the tendency toward intense friendships with other members of one's own sex. The child seems, in a sense, to return to the beginning of the love cycle at which his chief concern was with himself. In this instance, however, he has progressed beyond self-love to the extent that he is capable of loving someone other than himself, but he chooses someone most like himself, namely a member of his own sex. From the psychoanalytical point of view homosexual episodes occur frequently in the early adolescent transition from parental to heterosexual attachments, and may prove useful in making this transition (Blos, 1962).

There is some scientific evidence and a good deal of clinical opinion to the effect that intense and highly emotional friendships between adolescent girls or between adolescent boys are most characteristic of groups that have little contact with the opposite sex. Close friendships between members of the same sex are thought of by most scientific writers in the field as a normal part of the psychosexual development which lasts a shorter or longer time and which assumes a greater or lesser intensity depending upon the particular young person involved (Farrelli, 1957). A study of the needs and interests of adolescent girls showed that of a carefully selected national sample of nearly 2000 girls 11 through 17 years of age, 60 per cent said they felt a girl friend could be as close to them as a member of their own family. A still higher per cent said that they needed and wanted loyal girl friends whom they could talk to and confide in.

Sullivan (1940) explains something of how this can be in the following sequence:

> Around the age of eight and one-half or nine and one-half to twelve, in this culture, there comes what I once called the quiet miracle of preadolescence....
>
> I say 'miracle' of preadolescence because now for the first time from birth, we might say even from conception, there is a movement from what we might, after traditional usage, call egocentricity, toward a fully social state....
>
> When the satisfaction or the security of another person becomes as significant to one as is one's own satisfaction or security, then the state of love exists. So far as I know, under no circumstances is a state of love present, regardless of the popular usage of the word.
>
> This state of affectional rapport—generically love—ordinarily occurs under restricted circumstances. In the beginning many factors must be present. Some of these may be called obvious likeness, parallel impulse, parallel physical development. These make for situations in which boys feel at ease with boys rather than with girls. This feeling of species identity or identification influences the feeling involved in the preadolescent change. The appearance of the capacity to love ordinarily first involves a member of one's own sex. The boy finds a chum who is a boy, the girl finds a chum who is a girl....
>
> As soon as one finds that all this vast autistic and somewhat validated structure to which one refers as one's mind, one's thoughts, one's personality, is really open to some comparing of notes, to some checking and counterchecking, one begins to feel human in a sense in which one has not previously felt human. One becomes more fully human in that one begins to appreciate the common humanity of people—there comes a new sympathy for the other fellow, whether he be present to the sense or mediated by rumors in the geography, or the like. In other words, the feeling of humanity is one of the aspects of the expression of personality which comes in preadolescence.

Crushes are particularly likely to occur in camps, most of which separate the sexes, and all of which, except the family camp, separate the young people from the familiar settings, routines and particularly from the personnel of their family. Even though the adolescent is in the throes of es-

intensive exclusiveness of the relationship, the more wholesome aspects of friendship often develop. When this results the young people not only learn an invaluable lesson about human relationships, viz., that one can hold love only by freeing it, but they often save a valued friendship which might, and probably would, otherwise soon wear thin.

Some clinicians judge the wholesomeness or unwholesomeness of such friendships purely on the basis of physical expressions of affection. This is an unsound basis for judgment. Some of the most possessive, restricting, unwholesome psychological relationships exist quite apart from any but superficial physical expressions. Occasionally, the reverse is true, and a rather intense physical expression may exist within the framework of a sound psychological relationship.

The chief damage that comes from overt homoerotic practices in the homosexual stage of psychosexual development seems to come from the "guilt complex" that may result from the young person's feeling of guilt in connection with the practices, or from unwise handling of such a situation when discovered by adults. If the young person comes to doubt the "normality" of his psychosexual development, the result may prove disastrous since the seed of such doubt may grow into wrong emotional conditionings around the sexual function, thus arresting development and blocking normal adult functioning. Wisely handled, such experiences for most young people need not leave disaster in their wake. It cannot be too strongly urged here that teachers, parents and guidance personnel turn the handling of such aspects of psychosexual development over to experts specially trained to handle them.

In discussing homosexuality the difference between this term and the term inversion should be made clear. Inversion refers to the personality structure of an individual rather than to the form of sexual gratification as such (Brown, 1958). Inversion is usually based on an early and continuing identification-attachment to the opposite-sexed parent because of which the child incorporates and adopts the role-model of the opposite sex. As a result of this he (she) finds overt sexual expression to the opposite sex difficult or impossible. This phenomenon, it is believed, occurs more often in males than in females.

The Later Adolescent's Progress toward Maturity. An important step in the maturing process of later adolescence is accomplished when the young person has a fairly wide experience in boy-girl relationships. Through this experience, the transition from the liked-sexed companionship and play takes place and a basis for adequate mate selection is laid. Young people normally pass through the homosexual into the heterosexual periods of psychosexual development as the biological functioning of the sexual mechanism becomes sufficiently established to induce interest in mating. The chronological age at which this occurs varies from 11 or 12 to 18 or 19 years for girls (about one to two years, as a rule, after the menarche), and from 12 or 13 to 19 or 20 for boys.

The Survey Research Center of the University of Michigan (1958) studied the dating practices of nearly 2000 girls 11 through 17 years of age in a carefully selected national sample. They found that before 13 the boy-girl social affairs were group affairs at which the children had no special dates (Fig. 88). At 13 more than one-half of the girls said they did some dating, usually at group parties or with one or two other couples (Fig. 89), with nobody being more than just friends.

Among the 13 year olds interviewed there seemed to be little difference between the "daters" and the "non-

FIGURE 88. Mixed parties: no special date. (Courtesy of H. Armstrong Roberts.)

FIGURE 89. Group dating. (Courtesy of H. Armstrong Roberts.)

daters" in general social experience. There were, however, differences in their feelings about boy-girl relations. Over one-half of the nondaters said they wished they could have dates; all of the daters presumably wished to date. It may be supposed, then, that about one-quarter of the girls of this age did not yet wish to date. Only 6 per cent of the 13's who dated did so more often than once a week, and 40 per cent did so only "a few times a year." Sixty-one per cent of the 14's, 77 per cent of the 15's, and 88 per cent of the 16's said they dated fairly regularly. Ninety per cent of the over-sixteens dated regularly (Fig. 90).

Contrary to the popular idea that high school young people typically "go steady," this study found that only 10 per cent of the 11 through 17 year olds said they "go steady"; only 27 per cent of the 16's and 17's do so. Less than 20 per cent of the girls sampled said they liked the idea of going steady, and 80 per cent said they thought there were more disadvantages than advantages to going steady (Fig. 91).

In a comparable study of 14 through 16 year old boys it was found that 59 per cent of the boys in this age group dated occasionally; 41 per cent of them did not date at all (Survey Center, 1955). Some of thé latter group said they were not concerned about relations with girls, adding that they were not interested in the subject of dating. Only 20 per cent of the total sample of boys expressed concern about their relations with girls. These boys were asked if they were starting a new club what they would do about boy and girl members. Forty-two per cent said they would like it to be just for boys; 37 per cent for boys and girls together; 21 per cent said they would not care which way it was organized.

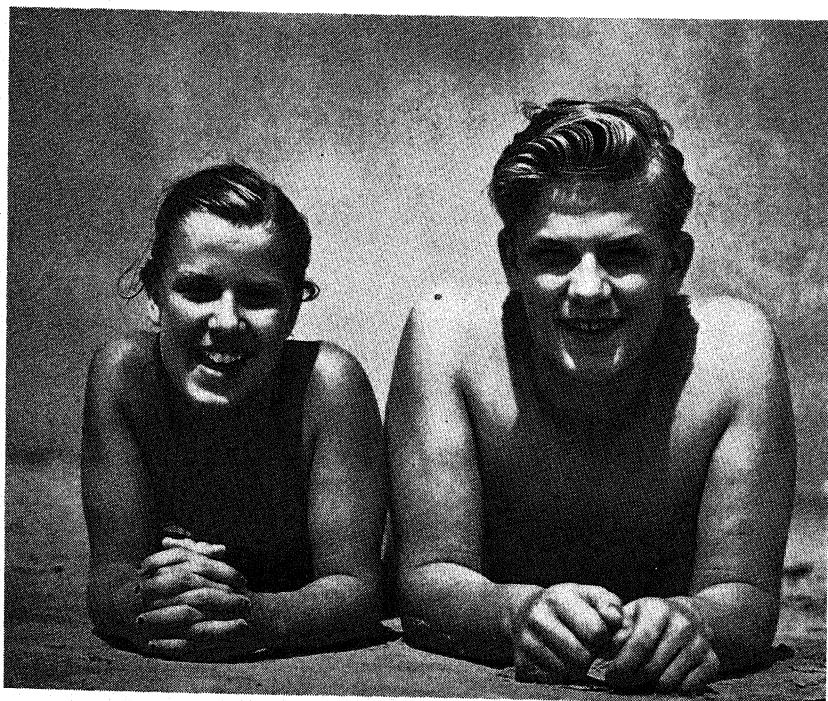



FIGURE 90. Dating regularly. (Courtesy of H. Armstrong Roberts.)

FIGURE 91. There is advantage in not going steady. (Courtesy of H. Armstrong Roberts.)

Bock and Burchinal (1962), in a study of direct relationship between *social status and age of marriage* among midwestern high school juniors and seniors, found no indication that more lower status subjects had steady partners but did find a suggestion that lower status subjects reported being in love more frequently. High status students expected to defer marriage longest, while low status students showed a tendency to expect to delay marriage only a short period of time.

A great deal of concentration on boy-girl relationships is an accepted and desirable part of our cultural pattern for adolescent young people. Since we permit (or even force) them to choose their own mates, we must make it possible for them to do enough "shopping around" to make the wisest possible choice. It is only in our modern Western culture and, very recently, in China and India that young people have been permitted to make so serious a choice for themselves. Centuries of tradition dictated that parents knew better what was necessary for a good mate than young people could possibly know. More than this, families who knew each other, often for generations, chose knowingly. Today, young people are not only permitted to make their own choices, but to do so from among young people whose families, whose backgrounds, whose early experiences and habits, whose tastes and abilities and attitudes are almost entirely unknown. Rapid changes of neighborhoods, highly mobile means of transportation, extensive contacts in high schools and colleges made up of thousands all widen the marriage

market, exposing young people to a bewildering choice that would test the wisdom of the oldest and most experienced person.

It is slight wonder that parents feel anxious about the experiences of their young people, knowing how important are the choices and the involvements of boy-girl behavior through this after-sexual-maturity-and-before-marriage period. Yet the peer-culture of these young people, the dictates of the "modern" procedure, exposes them to wide contacts with the opposite sex under conditions which take them away not only from the chaperonage of parents but, through the automobile, easily away from the deterring effect of any people who know them. The anonymity which the automobile gives today's young people places upon them a heavier responsibility for self-control and sound judgment than has been placed upon sexually mature young people in recorded history.

TEEN-AGE MARRIAGE

Early marriage and parenthood has been a substantial factor in family life since World War II. About 1,600,000 teen-age marriages took place in the United States in 1962. Marriages are occurring at increasingly younger ages in many countries and without the long-standing controls of mate selection, family preparation for marriage, and readiness of the young to assume the responsibility of the home. (P. P. W. Knapp, Tenth International Congress of Home Economics at the Sorbonne, Paris, July, 1963). Table 3 shows that in March, 1962, of approximately six million boys ages 14 to 17 in the United States, 33,000 were married, 6000 had been separated, and 1000 had been divorced. Of the approximately six million girls of this age (14 to 17), 233,000 were married, less than 1000 were widowed or divorced, but 2000 of them had been married more than once. The presence of children in these marriages had only a small effect upon the maintenance of the marriage (Goode, 1961).

Effect of Family Background on Teen-age Marriages. Although, as we see, many teen-age marriages prove to be successful, their instability is relatively high. Isenberg (1961) studied marriages of high school students (at least one spouse in high school at the time of marriage) and a control group made up of husbands and wives marrying between 21 and 26 years of age. He found no difference between the two groups in the proportion of wives coming from broken homes, but the teen-age husbands were less likely to come from "intact" families than were the more mature husbands. He found associated with the high school marriages: young age at first date, steady dating experience, and premarital pregnancy.

Quality of Teen-age Marriages. Isenberg also found that teen-age marriages seemed to be more subject to strain; their income was markedly lower than that of the control group, and living with others was a more common experience for them. The wives showed greater ambivalence or hostility toward their in-laws, and there was strong evidence that both spouses were less satisfied with the marriage than were the control spouses. More of the teen-age spouses considered themselves unprepared for marriage, and more of them, if doing it over, would postpone marriage.

The Unmarried Mother. The problems of irregularity in family structures, such as births out of wedlock, are complex, involving broad social problems that give rise to many social ills. Some of them are environmental—such as crowded housing, lack of everyday necessities, a dearth of opportunities to achieve, prejudiced

TABLE 3. *Teen-age Marriage Statistics**

A. *Males 14 to 19 Years of Age*			
Ages	*14 to 17*	*18 and 19*	*Total 14 to 19*
Total No. in U. S.	6,320,000	2,442,000	8,752,000
Married	33,000	220,000	253,000
Separated	6,000	6,000	12,000
Widowed	--	--	--
Divorced	1,000	7,000	8,000

B. *Females 14 to 19 Years of Age*			
Ages	*14 to 17*	*18 and 19*	*Total 14 to 19*
Total No. in U. S.	6,157,000	2,759,000	8,916,000
Married	233,000	819,000	1,052,000
Widowed	--	7,000	7,000
Divorced	--	14,000	14,000
Married More Than Once	2,000	9,000	11,000

*From the World Almanac and Book of Facts, 1964. Figures are for March, 1962, the latest available as this book went to press. Figures are to the nearest thousand. -- means less than 1000.

attitudes, limited educational facilities, parental confusion, and lack of guidance. Some of the problems are emotional and include a variety of interpersonal relationships, concepts regarding self, values that may influence acceptance of responsibility, and social experiences involving opportunities for identification. These difficulties are compounded by the unreadiness of the young girl to assume responsibilities of motherhood at all, much less without a husband and acceptance by society (Gallagher, 1963). The National Vital Statistics Division of the Public Health Service of the United States Government estimated the number of births in 1960 to unmarried girls 17 years of age and under to be 48,000. Many of these mothers were 15 and 16 years of age. This was estimated to be about 20 per cent of the births out of wedlock that year to women of all ages.

We can, perhaps, understand the problem of conception out of wedlock among adolescents if we consider the problems faced by adolescents: the need to be liked; the tendency to go along with others rather than run the risk of being different or possibly even ostracized. Competition among girls for a particular boy and a desire to be popular might well cause a girl to "go along" with the boy's request. This competition is heightened today by the parents' desire that their daughter be popular. Today's stress on popularity is correlated with the custom of steady dating at a very young age. Many early teen-agers are given the key to the family car or even a car of their own, and a key to the house, then are left almost entirely

on their own. This, added to the long established and natural struggle of the adolescent to prove he is already an adult, can foster much difficulty and even tragedy.

As was said earlier, biological maturing is occurring earlier than it did two generations ago; sexual drives appear before the individual has accumulated the general maturity and social experience that was possible two generations ago. Given time, and freedom from critical mistakes, a gradual growth will enable the teenager to cope with the tensions and responsibilities of adult life. They will cope successfully if early family backgrounds have established the ability to handle feelings, to make sound judgments, not only to foresee consequences of present behavior but also to accept the responsibility for one's actions.

EXPERIENCES TO VITALIZE CLASSWORK

1. Observe a group of gang-age children, or recall your own childhood peer group. What moral judgments and ethical attitudes do you see being learned or did you learn through this period? How were these lessons effected?
2. Recall some episode of stealing in your life. What made you do it? How was it handled? What was the result for you? Do the same with some lie you told as a child.
3. Discuss what elementary and high schools can or should do in developing moral judgments and ethical attitudes.
4. Recall some young adolescent whom you know well. Does he have heroes? Who are they? What effect do they have upon his behavior? If the effect is bad, what would you do if you were his parent?
5. Outline what would seem to you to be a workable plan for counseling high school students on whatever personal problems you consider to be the province of the high school.
6. Trace your own psychosexual development or that of some young person you know well. Can you recognize the progressive steps by which you (or they) acquired important personal and social attitudes? What kind of sexual experiences did you (or they) have? What kind of sex education? What do you (or they) need now in attitudes and self-controls in order to complete growth into a sound adulthood?
7. Do you agree with Landis' listing of influences which underlie problems of moral choice for young people today? Can you add others?

SELECTED READINGS

Blos, P.: On Adolescence. Chicago, The Free Press of Glencoe, 1962.

Crow, L. D., and Crow, A. (eds.): Readings in Child and Adolescent Psychology. New York, David McKay Co., Inc., 1961. Chapter IV (25), Adolescents' Views on One Aspect of Their Development, by Ruth Strang; Chapter XIII (73), Discipline: The Psychological and Educational Aspects, by H. L. Silverman; (74) Moral and Spiritual Values, by Henry Neumann; (76) A Code of Moral and Spiritual Values, by Paul S. Anderson; (77) Psychosexual Development, by L. J. Stone and J. Church; (78) The Nature and Origins of Psychosexual Identity, by Thomas Colley.

Fishbein, M., et al.: Modern Marriage and Family Life. New York, Oxford University Press, 1957.

Grinder, R. E. (ed.): Studies in Adolescence. New York, The Macmillan Co., 1963.

Jourard, S. M.: Personal Adjustment. New York, The Macmillan Co., 1958. Chapters 5 and 8.

Kiell, N.: The Universal Experience of Adolescence. New York, International Universities Press, 1964. Chapter II, Psychosexual Characteristics; Chapter III, The Sexual Enlightenment of Adolescents; Chapter VIII, Socioeconomic Consciousness and Prejudice; and Chapter XIII, God, Father and the Adolescent.

Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958. Selections 40, Ethnic Cleavage among Young Children; 41, Children's Ethnic Attitudes; 46, The Development of Responsibility in Children; 65, Pre-Adolescents—What Makes Them Tick?

THE DEMANDS OF LIFE

When the school years are over and the young person must meet life, he will, as we said in Chapter 1, have accomplished certain developmental tasks. By so doing he can become economically independent; he can make a social adjustment to the people with whom he works and lives and who live in his community; he can function as a citizen of his community and of the world; he can adjust to marriage or to the lack of it; and he can live successfully with himself and with his place in life. In other words, he will have acquired an adequate life philosophy.

If he has so matured he will probably have acquired through his growth period:

1. Adequate physical health and vigor.
2. Well-formed habits of eating, sleeping, exercising and health protection.
3. Sufficient command of bodily skills to:
   a. Insure exercise enough to keep well.
   b. Utilize his body for efficient work and restful play.
   c. Encourage general self-control through bodily control.
4. A satisfactory appearance and manner.
5. A well-developed intellect, a good background of facts and ideas, and good habits of clear thinking; adequate diction and

vocabulary and the ability to express himself well.
6. A progressive weaning from childish behavior and from excessive dependence upon others.
7. A widening range of interests and creative outlets.
8. Increasingly adequate social skills; ever-widening insights; tolerance and understanding; genuine consideration for others.
9. A well-balanced moral and ethical code of behavior and the ability to live up to it.

Let us review some of the steps by which this growth comes about. We shall assume a good heredity and adequate prenatal and obstetrical care.

From Birth to One Year. The newborn baby is a bundle of potentialities; because of immaturity he is completely dependent upon others for the fulfillment of his needs. Sleeping, eating and exercising are the major business of the infant, because rapid physical growth and maturation are the order of the day for him. Not only does he grow rapidly in length and weight, his internal organs also develop rapidly. About eight first teeth erupt and permanent teeth begin to be laid in during the first year. Foods that differ from milk in flavor and consistency are introduced, although vegetables and meats must, at first, be sieved or scraped. Spoon and cup first supplement and then gradually replace breast and bottle feeding, thus beginning the adjustment to new conditions as well as starting the weaning from too close attachment to the mother and to one's own babyhood. By 1 year the infant is generally on a three-meal schedule. He has one, or perhaps two, naps a day. This rapid growth and the laying in of teeth necessitate special attention to growth-stimulating foods, activity and rest. Limited ability to fight disease requires reasonable protection from bacteria; limited ability to adapt to wide ranges of temperature makes it important to guard him against temperature changes.

Helplessness is to be expected in an infant. He is not supposed to carry any responsibility, to care for himself in any capacity except to exert the effort of eating when food is presented to him. Yet, he is developing rapidly. From the uncontrolled movements characteristic of the newborn, the year old child will have learned the postural controls and will have developed the muscular strength for standing alone and, soon to follow, for independent walking. He will have learned to see, to hear and to touch, and will have blended these learnings into eye-ear, eye-hand and hand-mouth coordinations. Through these he will translate much of the world about him into intelligible meaning and will have gained some useful command of the things that come within his reach. He will understand a considerable amount of language and will have begun to speak two or three meaningful words. He will have begun to make decisions and to solve problems which lead to more complex reasoning. He will have discovered people and already will have developed fundamental personality reactions to them. He will, in his own way, have discovered the beginning of authority, reactions to success and to failure, the satisfaction of work to accomplish results, the pleasure of the struggle that leads to achievement.

In Chapter 3 the concept of developmental tasks was discussed and a summary of the tasks as listed by Havighurst was given for each major developmental level. There was also reference to Erikson's gradations of critical learnings which must be accomplished (or of problems which must be solved) for each developmental level if personality growth is to proceed smoothly. If these problems

are solved successfully, the child develops vigor and confidence for the next stage of growth. Erikson (1950) describes these problems as conflicts of feeling and desire which appear in a new form with each shift in experience and environment. However, each type of problem appears in its most critical form at a particular stage of development; if it is well solved at that stage it forms the basis for progress to the next stage; if not solved it continues to exist as an unsolved problem in the personality.

Erikson states that the first year of life is the crucial time for the establishment of the first component of a healthy personality, namely, *the sense of trust.* As the infant finds his needs for food, cleanliness and comfort met by his parents, he comes to feel that his needs will be met when they arise. As he begins to bring his own body under control, he feels a growing confidence that he can adapt his movements to achieve his goals. As he plays peekaboo he sees something disappear and return again; thus, he grasps the fact that things continue to exist even though he does not see them, and hence, that there is order and stability in the universe. At 6 to 9 months the struggle to trust or to mistrust the world comes to a climax as the child comes to realize that he and his environment are things apart. The parents, if they love him and are sensitive to his needs, help him to develop trust, not only in them but in his other surroundings and, especially, in himself. Erikson says that development of this sense of trust is not only the first but the most important component of a healthy personality.

Later Infancy and Early Preschool. Between 1 and 3 years of age physical growth proceeds somewhat less rapidly, though changes in body proportion and development in the neuromuscular system permit the rapid acquisition of balance and skill that characterize the child who is learning or has learned to walk and run about. At 3 years the child has all of his deciduous teeth and is laying in many of the permanent teeth. Because of his slower rate of growth and his absorption in his growing abilities and in his environment, his appetite may decrease temporarily. His food now includes nearly everything eaten by the family except highly seasoned, rich or very coarse foods. This is an important time for extending food likes and for establishing good food habits. At this time most children join the family at meals and thus become much more a part of family life and routine. They usually require a supplementary cracker and milk or fruit juice between meals. One nap a day, usually in the afternoon, now suffices if night rest is long enough.

In mental growth the spectacular achievements of this period are in the acquisition of rapidly increasing controls over general body skills and hand controls, the tremendous explorations into "what, why and what for?" about all the familiar things and events in the immediate environment. Rapid expansion of both understanding and use of language also occurs. Adequate playthings to encourage vigorous bodily play as well as to develop manual skills and to train sense perceptions are important.

Although the year old child does not appear to be aware enough of routines to resist them, the 18 month old child is likely to do so.

> At eighteen months the child is a nonconformist, not because of a propensity to rebel but because his stock of perceptual differentiations and embryonic conceptions is so small and so precarious that he clings to his mental possessions as he clings to his mother or to an object in his hand. For him sudden changes are precipices. He avoids them by lying down, by backing away, by running off to hide, by screaming, struggling or beating the air (Gesell, 1952).

This, added to the other aspects of developing need for self-assertion and confused sense perceptions and judgments, produces the negativism or temper tantrums that characterize this period. If routines are more rigorously imposed than the child can readily adjust to, food strikes are a frequent manifestation of this negativism, as is also resistance to toilet procedures. Learning to control this resistance or temper it is one of the most important accomplishments of this period since it represents real beginnings in self-control and cooperation with others. Ausubel (1958,b) discusses certain transitional phases or developmental crises during which "the individual is in the marginal position of having lost an established and accustomed status and of not yet having acquired the new status toward which the factors impelling developmental changes are driving him. . . . There are reasons for believing that transitional periods in personality development must be difficult and productive of stress." Children meet these situations in their own individual ways; their adjustment devices are frequently labeled behavior problems.

Even though he resists routines and changes, the 2 and 3 year old child is advancing rapidly in his understanding of and cooperation with health habits and in his conformance with the domestic conventions of dressing, bathing, eating, etc. Control of elimination should move toward perfection during these years.

This is also a period of rapidly expanding awareness of other people as separate from oneself. However, the child of this age animates inanimate objects and carries on long conversations with himself as if one of him were talking to another, and thus gives evidence that separation of self from others is still not complete. He often has imaginary companions from 3 years on and in other ways around 3 years seems to carry other personalities around within himself as not quite separate from himself. His interests widen beyond himself and his immediate toys and his affection spreads from his mother to include other members of his immediate family.

Erikson (1950) says that from 12 to 15 months through the next two years much of the child's energy will center around asserting that he is a human being with a mind and will of his own. Thus, he develops a *sense of autonomy*, the feeling that he is an independent human being even though he still needs and is able to use the help of others. He develops this sense of autonomy through the constant exploring of objects around him, the constant insistence that he be allowed to do things (or at least to try to do things) for himself, that he be permitted to make such choices as he is able to make, and through learning that in spite of temper outbursts he can accept and tolerate restrictions when necessary. This is, as can be seen in the behavior of 2 and 3 year olds, a struggle between his need for help and his urge to independence. The favorable solution of this problem, Erikson says, is self-control without loss of self-esteem. An unfavorable outcome results in a lasting sense of doubt about others and about himself.

The Later Preschool and Kindergarten Period. Between 3 and 5 or 6 years the child's physical growth rate is slower than at any time between infancy and early adolescence. The knock-knees and pronation that characterize many younger children now tend to disappear. Appetite is still not keen. The child eats regular meals with the family, needing only to have his meat cut to bite size and his bread spread with butter. He may still need something to eat in the midmorning and midafternoon. He continues an afternoon rest even though he may not

sleep. Toilet control becomes complete during these years.

All motor skills progress rapidly toward perfection during this period. Self-care activities like feeding, dressing and undressing, care at the toilet, washing, and picking up toys improve as a by-product of improved physical skills and as a definite beginning in the business of carrying one's own load in life. Cutting, pasting, "drawing" and "painting," block building and other creative activities are begun. Interest in hearing and in telling stories develops. Accuracy in sense judgments in many areas approaches perfection; appreciation of the meaning of numbers is begun, and some accuracy in the understanding of the shorter time units is developed. Eagerness to meet new things and new experiences is in full swing and leads to rapid expansion of factual knowledge and of language. Reasoning and problem solving become more adequate in direct proportion to the opportunity the child has to reason and to solve the simple problems of his daily living.

The child is now conscious of how he looks and is unhappy if he is conspicuously different from other children. He gives many evidences of conforming to social demands and is willing or even eager to run simple errands, to help with drying the silverware, dusting or setting the family table. He constantly asks, "Is this the right way?" "Am I doing it right?" His eagerness to please and to follow the "right way" is so constant that a marked persistence of behavior problems at this age is suggestive of faulty functioning in some area of his growth.

Contacts with people, especially with other children, widen during this period so that elementary lessons of give and take may be learned as a preparation for the social adjustments that school will require. Weaning from too great dependence upon the mother or other members of the family is well under way. The beginnings of cooperative behavior are made. Concentration of interest upon his own wishes and impulses is gradually being superseded by more social behavior. Adults can help the child to get along with others with a minimum of conflict, to substitute verbal methods for fighting and snatching, not to be a crybaby when hurt or crossed but rather to develop courage in the face of pain or disappointment.

In less privileged economic groups, children of this age or even younger have frequently made adjustments of self-care, ease and familiarity with a wider variety of adults, and even the care of younger children. Such children can often make change up to a dollar, can drive a rather sharp exchange bargain, and are sometimes almost entirely responsible for household affairs while parents are absent at work. Whether the child is economically privileged or underprivileged, the preschool period sets certain attitudes and emotional habits, especially those which concern home standards, so that they are fixed, or only slightly modified, thereafter.

Erikson, continuing his discussion of the problems that must be solved at the various ages, says that the child of 4 or 5, having become sure for the time being at least that he is a person in his own right, now wants to find out what he can *do*. He closely observes the activities of the adults around him (particularly of his mother and father, but also of the milkman and truck driver) and tries to imitate their behavior. Thus, with the enlarging horizons as he enters kindergarten and as he widens his experiences beyond the immediate neighborhood, this period becomes one of enterprise and imagination and of joyous, creative play. As was seen in earlier chapters, this is a period when conscience begins to function as an inner censor

of his behavior. The problem to be worked out at this stage of development is to experience the use of one's own will without too much sense of guilt about one's actions. The fortunate outcome of this period is a sound *sense of initiative* guided and modified by conscience.

Erikson feels that if the first three stages of personality development (the sense of trust, of autonomy, and of initiative) are achieved satisfactorily and if, with them, are developed caution, self-control and conscience, progress through the later stages is fairly well assured. However, as Washburn (1957) states, the stage may be set during the preschool years for an unhappy adolescence. The child who has an acutely anxious time at 4 to 6 years of age and does not solve his problems about himself, his place in the world, and his relationships with his mother, father and siblings is often headed for a stormy adolescence.

The Childhood or Early Elementary School Period. The childhood cycle, which closely approximates the elementary school age, begins with the appearance of the sixth-year molars and lasts until the onset of pubescence. This is ordinarily from 5 or 6 to 10 or 11 years of age.

During this age the child consolidates his previous learnings and carries forward earlier growth accomplishments. Slow, steady physical growth is the rule. Many underlying changes preliminary to pubescence take place, but spectacular adjustments do not command the attention of adults as they did earlier and will again in pubescence.

This age is no time, however, to relax on health supervision of children. The need for careful protection of health and for recognition and correction, insofar as possible, of physical defects in the early elementary years is indicated. In a study of the physical status of a group of army selectees examined and disqualified for military service, Ciocco and associates (1941) found that the great majority of the men who were disqualified because of eye, ear or dental defects had shown some indication of these defects in their early elementary school years. Of those rejected many had been, in their early years, below par physically as indicated by underweight, fair or poor nutrition or posture. Good health care during the early school years can be good insurance for the future. There is a sharp peak in communicable disease in elementary years. The common cold still appears frequently. For many children this is a period of slowly increasing resistance to and quicker recovery from illness.

The early elementary school period is one in which children are more "on their own" in physical routines, and one in which correct food, rest and elimination habits can function without close adult supervision.

Children strengthen their habits of good physical hygiene by learning the reasons for such habits. The child becomes more efficient in self-care; he is able to follow simple precautions against colds and against spreading disease recklessly; he can understand how to prevent accidents; he can take treatment during illness and the routines of a physical examination in his stride; he can be aware of any shortcomings of his body and be reasonably responsible for doing something to meet them, e.g., not running if the defect is a bad heart, not eating sugar if it is diabetes.

Entrance to school tests the adequacy of the previous physical as well as psychological development, since it demands physical strength, a reasonable resistance to colds and other diseases, the ability to leave home and mother, the ability to concentrate for at least short periods of time, adjustment to an authority other than the parents, a capacity to be with

other children without fear on the one hand or intoxication on the other. It requires reliability in toilet habits, independence in dressing (at least for outer garments), ability to understand and to speak language, sufficiently developed sense perceptions to warrant success in school subjects.

School is the child's business—his job. The attitudes he takes toward this job will determine much of his early success or failure with it. The attitudes he learns from it will be of great importance to his attitudes toward work, toward responsibility, toward himself, and toward life in general in later years.

Erikson's fourth stage, which begins around 6 years of age and extends over the next five or six years, has as its achievement objective the *sense of industry* or, as Witmer and Kotinsky (1953) have chosen to refer to it, a sense of duty and accomplishment. As was said above, in certain underprivileged groups children learn this before they are 6 years of age. Learning how to do things and to do them well is an important aspect of this stage of personality development. School, of course, becomes (or should become) an instrument of basic importance in this development.

Upon entrance to school and in participation in group activities many children for the first time meet standards of moral and ethical behavior which differ from those of the parental home. Some of these are good and serve to widen the child's horizon of acceptable behavior and, hence, his tolerance. Some are bad, and he must develop an immunity to these as he does to new germs he meets at this time.

Boys, particularly, resent nagging and oversupervision, even though dependence upon the home is still great during this age. Food and shelter are only occasionally obtained away from home; the security and sweetness of parental protection and love are still very attractive—the boisterous boy still likes to be tucked into bed at night with a bedtime story, and often with his favorite doll or toy animal. However, increasing independence from adults is not only desirable but imperative, since the child of this age who associates with adults to the exclusion of peers becomes dependent, shy with children and too amenable to adult and child authority. Deprived of adequate opportunity to learn adjustment to peers, he may even become whiny, sulky and subject to inferiority feelings.

Particularly evident during the elementary school years is the abundance of energy that makes "roughnecks" of these children. Their movements are vigorous, their voices loud. For boys there is great emphasis upon "being a regular guy"; shirts are hanging out, sox are rumpled, and hair is mussed as evidence that one is not a "sissy." One understanding mother who had an older son said of her younger 9 year old: "Now you can't get him into the bathroom. Wait five or six years and you won't be able to get him out of it." Both girls and boys fight as they develop an aggressiveness that seems at a premium in our American conception of "looking out for oneself." They have a great need for activity, both physical and mental. Control over the body proceeds rapidly as the child practices physical skills by the hour. Control over the mind is also challenging, and most children enjoy the feeling of having learned new and difficult things. Reading, writing, arithmetic, playing games, controlling muscles, learning to get on with peers are the preoccupations of the early elementary school child. Children of this age show an eagerness to extend horizons intellectually as well as physically. They are alert to learn about everything near themselves and are willing to be carried into a grasp of

world affairs. They love to dramatize the history of the Pilgrims, of Indians, of the Civil War, and to celebrate Veterans Day. They can work for months on a transportation project and love to visit the creamery or other sources of food and everyday things. In a way, this is simply an extension of the constant what-where-why curiosity of the preschool child.

This is a desirable time to utilize the alertness and eagerness of the child for the development of hobbies and interests that will serve to enrich his life in later as well as in the present years. Interest in woodwork, collecting, arts and crafts, and dramatics can be stimulated easily. In fact, the years from 9 to 12 are the ones of greatest range of play and hobby activities and interests. Objective criticism and a sense of responsibility can be developed because of this eager interest in work. The child's natural desire to learn is perhaps the reason we exact so much learning from our early elementary school children.

Standards are often set by the adult at a higher level for the child than the adult expects of himself or maintains. The development of conscience and of moral standards moves forward rapidly. This emphasis upon standards by adults sometimes combines with the child's natural urge to do the right thing and produces a heavy emotional burden for the child. Some children become overconscientious and are weighed down with a sense of futility and failure. In spite of all these demands, however, most children adapt well to the increasing need to adjust themselves to the world about them.

In spite of this desire to learn, however, the boisterousness, noise and clumsy haste of these children make fifth to seventh graders the hardest groups in the school to keep in some order and to move forward in a smooth academic sequence. This is a time, fortunately, when the group-play impulse is strong, and group solidarity can be used to move a class in a group, even though individual competitiveness also characterizes this age. Although the group interest helps the teacher in providing a sense of solidarity, it places another handicap on schoolwork in addition to its encouragement of boisterousness. It fosters the naturally silly behavior which characterizes this age. Poking, tripping, practical jokes for boys, incessant giggling for girls can try the teachers' or the parents' patience to the breaking point.

Aside from the mistakes with property rights discussed under stealing in Chapter 14, and those with truth-telling discussed in Chapters 10 and 14, there are two types of behavior problems that characterize this age. Teachers and parents are aware of the one type, namely, aggressive boisterousness and silliness, inattention, carelessness, disorder, disobedience and disrespect, truancy and failure in school. The clinician is aware of the other type, namely, shyness, daydreaming, passive failure to cooperate, nervousness and hurt feelings, fears and other retreats from activity. These are all symptoms of incomplete learnings, of schedules that provide too little acitivity or demand too much, of school courses that bore children or that produce tension and anxiety, of emotional instability or physical inadequacy or discomfort, lack of emotional security either present or past, or some other situation that is not conducive to normal growth.

The Junior and Senior High School Age. The outstanding phenomenon of these years is the onset of adolescence with the rapid biological maturation of the body and the changes in social and personal interests that accompany this. The rapid physical growth of early adolescence places great demands upon the child. This is

a period of accentuated physical differences between early and late maturers. It is also a "time of physiological learning," a time when body functions are becoming stabilized.

Complete adult height is achieved during the pubescent and postpubescent years, skeletal and sexual maturation are completed, and the eruption of permanent teeth is completed except for the wisdom teeth. The pubescent child's appetite is either voracious or he becomes "picky" about food and he is likely to begin a habit of between-meals munching that may lead into a bad cycle. Candy bars after school dull the appetite for dinner. Another snack by bedtime, combined with a late bed hour, results in heavy fatigue in the morning and no appetite for breakfast. Soda fountain snacks, an ill-chosen lunch at the school cafeteria and further snacks after school may set up a cycle in which the child gets a preponderance of sweets with too little of the substantial growth-promoting foods. Health habits during this period still require careful attention both at home and at school, since even the most carefully trained child may appear to forget all he knows about self-care at this time.

Early adolescence is ordinarily a period of good health. However, the adolescent who develops poor health practices may find that rapid growth, combined with rapidly increased school and social demands, may make him a prey to mononucleosis or to tuberculosis. That this happens fairly often is indicated by the relatively high incidence of both of these illnesses among adolescents. Periodic health examinations are as important now as they were during the earlier years of childhood. Not only is it necessary to watch carefully for evidences of inadequate nutrition and rest and of too great academic and social strains, it is also excellent preventive mental hygiene to help young people to understand and adjust to the growth phenomena peculiar to this period. Appearance of secondary sexual characteristics is often a source of anxiety and conflict. The question, "Am I normal?" occupies far more of the early adolescent's attention and emotional energy than is generally supposed (Landis, 1952). These psychological as well as physical problems of young adolescents call for attention from physicians and guidance personnel at regular intervals. The imperative necessity for adequate sex education is, of course, obvious.

Intellectually, the adolescent experiences a steady widening and deepening of capacity to think and reason. If home and school offer adequate stimulation there is a growing sense of current events and world affairs. There is a dawning awareness of the fact that soon he must not only know about the world but will also be required to meet life as an independent adult. Although schoolwork often suffers because of the young person's concentration on his social and personal problems, there is frequently a sense of being born intellectually. New ideas become fascinating; the unending scope of the "not-yet-known" stretches out ahead and urges the student into eager pursuit of knowledge. Children who have been indifferent to schoolwork sometimes become seriously devoted to the exploration of new academic fields. Occasionally, this newly acquired student attitude is merely a cover-up for a feeling of failure in social contacts.

In our culture adolescents are expected to achieve at least three major steps in growth. (1) They must complete the weaning from dependence upon parental authority and protection and learn to think and act as mature, rational adults. (2) They must effect

the transition from peer group interests to adequate heterosexual adjustment. In most lives this eventuates in marriage and establishment of families. (3) They must adjust to their own capacities and limitations; they must learn to accept and use their capacities and also to accept, or whenever possible to change, their liabilities. They must take over the responsibility for making themselves the best and the most useful possible persons without at the same time losing their sense of proportion about the size or importance of any single individual in the scheme of ultimate existence.

Erikson expresses this another way when he calls attention to one of the problems of adolescent growth as the establishment of a *sense of identity* through which the young person comes to clarify who he is and what his role in society is to be. Erikson points out that this sense of identity is the person's only safeguard against the lawlessness of his biological drives on the one hand and the autocracy of his overweening conscience on the other. After the sense of identity is formed, it then becomes possible for the young person to develop a *sense of intimacy*. This sense of intimacy must come about in his feelings for persons of the same sex as well as in his feelings for the opposite sex and for himself. As he becomes sure of himself, he can then seek and express closer relationships in friendship, love and inspiration.

The young adolescent usually senses all of these obligations at least vaguely. He longs for freedom from adult authority, yet he dreads the responsibilities of adult living. He looks forward eagerly at one moment, yet he looks back longingly to the security and freedom of childhood at another moment. This explains some of his inconsistencies, since he is clean and "prinked up" one day but slovenly and dirty the next. He works feverishly for a time, then relapses into childhood's comfortable laziness. He is businesslike and dependable, cooperative and eager one time, yet rude, uncooperative and defiant the next. He gives every evidence of his ambivalent feelings about growing up, and he shows clearly his state of confusion about his changing feelings, his temporary organic incoordination and instability, his eagerness to measure up to adult expectations, his conflicting fear that he may not do so, and his contrary inner need to defy authority.

Adjustment to the newly intensified sex feelings that follow soon after the appearance of secondary sexual characteristics absorbs much energy and thought, often competing strongly with schoolwork. How well the young person adjusts to moods, distractions and temptations will, of course, depend upon his previous habits of self-control, of responsibility, of consideration for others, and of seeing the future consequences of present behavior. However, glandular changes, rapid physical development, sharpened social awareness, and society's emphasis upon popularity with the opposite sex may provide a situation that outweighs even good previous training. Self-consciousness, shyness, feelings of insecurity that were dormant but never previously evident may be thrown into action, with the result that previously felt inadequacies are sharpened and a confused inability to understand and control the newly strengthened sex impulse produces uncontrolled and socially undesirable behavior. The young person may, at least in the early stages of adolescence, display an inability to measure up to the many new and exacting demands that parents, schoolwork and society lay upon him. Conflicts and confusions that were present in earlier childhood are often revived in adolescence. All

of his previous physical and psychological strengths and weaknesses, habits skills and attitudes are likely to be called into action. If previous training has not been good, disastrous behavior is more likely to result. However, good school training may combine with a basically sound constitution in the young person to avoid trouble even when previous habits and outlooks have been faulty. Last-minute gestures in the direction of control by parents seldom produce anything but sharpened antagonism and exaggerated defiance.

In our demand that the adolescent display adult judgments and responsibility we should recall that in our particular culture we keep young people in school, unmarried, and economically dependent upon their parents for some years after they are physically ready to reproduce the species. The situation was different in primitive cultures and, until recently, in oriental cultures, and even in our own culture until the past three generations. Young people, even before adolescence, were apprenticed to a trade so that they were established in lifework early. This, plus a tradition of generous dowries made early marriage not only possible but the custom. Young people grew up together, families knew each other well; parents either gave advice about mate selection or chose the mate outright. Choice of mate was not the "shot in the dark" that it so often is today. There are still a few sociological cultures in the world in which parents or tradition determine lifework and launch the young person in it early, in which codes of social behavior are fixed and require no special judgment, in which mate selection is done by parents and marriage immediately follows or even precedes biological maturity. In these cultures confusion for the young person is at a minimum, and the problem of adolescence consists mainly of curbing individual desires in favor of an acceptance of whatever destiny is selected for one.

Our young people have a tradition of free occupational choice among bewildering possibilities. Most high schools have trained counselors to assist the young person in vocational and other choices. They have the tradition, and in a genuine sense the reality, of free choice of mate. This frequently takes place under conditions where possible mates are new acquaintances and their families and backgrounds are unknown. Any advice from parents or oldsters is likely to be regarded as interference. This throws a heavy burden of wisdom of choice upon the young person. His problem is complicated by the economic and educational necessity for delay of marriage for several years after the sex urge is mature and ready for function. This leaves adolescents with the important problems of vocational choice and mate selection, while at the same time they are economically dependent upon their parents, thus necessitating submission to parental authority with consequent delay in decision-making.

The high divorce rate testifies to the number of mistakes that are made in mate selection. High labor turnover among young people who go to work early, and delay in decision about professional choice for those who can afford professional training testify to the difficulty of making adequate vocational choices. The high rate of neuroses and psychoses testifies to the difficulty of acquiring balanced and satisfactory personal philosophies. Yet, the great majority of young people live through a fairly smooth adolescence, making fairly wise vocational and mate choices and, in due time, develop a fairly workable philosophy of life.

Those who work professionally with children and their families find it

necessary to continue to learn about how to promote desirable growth. Research is accumulating rapidly enough that an alert guidance worker cannot afford to lean on past knowledge any more than physicians can afford not to keep up with medical advances. School personnel have a particular obligation to practice the best that is known, since they are the one group who join public health officials in reaching all of the children in any given community.

CASE STUDIES

The following case studies, one of a preadolescent boy, the other of an adolescent girl, may serve to make concrete our review of growth. Each is a typical, normal child whose good adjustment in the present stage of growth is the natural product of good inheritance, a good family who were interested in his development, and satisfactory growth in infancy and early childhood. Each had occasional difficulties of adjustment, but a sound attitude toward these on the part of parents and teachers brought the child through each incident to satisfactory readjustment. Each child has been average in some phases of growth and different from the average in other phases. Each, in other words, has had his ups and downs but each has grown, on the whole, very satisfactorily.

A PREADOLESCENT

Ted at 10½ years can be considered a typical preadolescent. He is full of energy, which he uses in all kinds of muscular activities, and which sometimes brings him into conflict with adults because of his exuberant spirits and boisterousness. He scorns girls and considers cleaning up at mealtime a nuisance.

Ted is the youngest of a family of three children. He was born at a time when his father, a professional man, was having financial difficulties and the family was forced to live on a marginal level. In order to supplement the family income Ted's mother went back to teaching as soon as he entered nursery school.

Ted has always been well, except for an occasional children's disease and colds. He has grown in height and weight at a rate similar to that of most boys. His bone growth, however, has been slower than that of most children of his age which indicates that he is "growing" faster than he is "growing up" as measured by the maturation of bone. While there has been no measure of his muscle development, in light of his motor ability his muscle development could be considered good. He has always been skillful in the use of his large and small muscles, and, at present, he is adept at Ping-pong and dodge ball and can manipulate a jig saw admirably. Like many preadolescents he uses these skills to attract attention to himself.

Ted's physical habits have been fairly good. His appetite has been excellent and he has learned to like a fairly wide variety of foods. In his preschool years he expressed his dislikes freely. At 10½ years he still carries a little "hangover" from earlier food attitudes since, although he says he likes a food, he nevertheless gives innumerable excuses for not eating it. Fundamentally, he still has some food dislikes but has become more skillful in covering them up.

Ted has developed mentally more rapidly than he has physically. He has consistently ranked as superior with especially good ability in reasoning and memory. His progress in school has been somewhat uneven, not because of limited capacity, but because of periods of lack of application. Those periods have been part of a total picture of unruly behavior which resulted from faulty discipline. During his preschool and early school years Ted missed his mother's companionship and close guidance. Out of school hours he was under the care of a series of maids and his behavior got out of hand because of the lack of consistent and firm yet understanding guidance.

Ted, when he applies himself to a task, has always been a good, enthusiastic worker. He will work, for example, a long time with the jig saw and do a good job of which he is justly proud to the point of being boastful. Occasionally, when he is unsuccessful he makes excuses, but for the most part he is a very good sport about failure. Ted is primarily interested in physical activities. Swimming time in school is his favorite school period. The academic subjects such as reading and arithmetic are less appealing to him. They are something to hurry through in order to pass on to the more intriguing things of life.

His behavior in nursery school as well as in elementary school showed that he could be an "angel" or a distinct nuisance. When situations and surroundings were new and strange as, for example, at the beginning of his nursery school experience and again during the early months of elementary school, Ted was the

"model" boy, cooperating and being a quiet member of the group. When he began to feel at home, he cast aside all inhibitions and became obstreperous. He behaved in this way because he was fundamentally shy. However, he has always had a great urge to be accepted by peers; hence, he "loses his head" once his shyness has worn off.

About two years ago, after much forbearance on the part of his family, his brother and sister assumed the responsibility of helping Ted to grow up in his behavior. Earlier these two siblings, who were eleven and nine years older, respectively, were no help to him. In fact, they made only two more older people to nag him and create confusion in his discipline. As Ted approached 8 years of age, however, his hero worship of these older siblings led them to take an interest in him. They were unusually fine young people and their influence soon became a real force in shaping Ted's behavior into more satisfactory patterns. At about this time the financial condition of the family improved with consequent release of emotional tensions.

The family during all of Ted's life has lived in a good residential neighborhood but, unfortunately, the children nearby have been either younger or older than Ted. Thus, he has had little opportunity to practice social skills with peers outside of school. Even in school his progress has been slow because of his undisciplined behavior and he has been in trouble frequently with both children and teachers. It is not surprising, therefore, that Ted is still a little slow in making friends and in becoming one of a group. He continues to carry a pattern of approach to social groups similar to the one he showed upon entrance to nursery school, kindergarten and the first grade. When he enters a new social group he becomes a quiet observer for a time. As he begins to feel at home he becomes more and more active and tries to tell the other children what to do. His overtures are not always successful, and when the other children calmly ignore his efforts he becomes more and more boisterous. His wealth of ideas and his ready wit make it possible for him to get the attention of others by arousing their curiosity and to become a ringleader in practical jokes such as putting salt and pepper in somebody else's milk. Whether his many ideas and abounding energy are used in constructive activities depends to a great extent upon skillful guidance by the adults present.

Thus, Ted is a healthy, attractive, somewhat shy boy with a winsome smile and many fine qualities, although he is often in difficulty with both peers and adults. In spite of this he quickly wins popularity among adults with his ready smile, his wit and humor, his intelligence and his ability to converse easily. With boys (he has no interest in girls) his popularity is won more slowly, but his skills and his wealth of ideas are, in time, an opening wedge into the group. He has much to learn but is progressing rapidly. He is acquiring techniques that will help him to get along with people; he is learning when to be serious and when to be silly; he is gradually learning that others have rights and privileges, that a boy can be neat at mealtime without being considered a sissy. He is accumulating habits and attitudes, values and standards that will be very useful to him later in adolescence and maturity.

An Adolescent

Jane at 18 is an attractive, intelligent girl who knows where she wants to go and is determined to get there. It is hard to believe that at 3 she was the shy, insecure child who came with her twin to nursery school. These two children had a difficult start in life. Both parents having died, the children had lived in five different boarding homes before they became a part of a family that gave them love and security. In this new environment Jane soon lost her apprehensiveness and settled down to growing. She has been a robust child from her early years. With the exception of an appendectomy and pneumonia during her adolescence, she has had nothing more serious than an occasional cold to interfere with her physical growth. In addition to what appears to be a sound physical constitution, she had good habits of eating and sleeping which were established by her foster family at an early age. Jane, fortunately, was the kind of child who took to regularity easily. A habit was quickly set and easily became a permanent part of her life. A good appetite, a good family diet and fine parental attitudes combined to give her an interest in food and a liking for a wide variety of foods. Her few dislikes have persisted from the preschool years. Consistency and texture of foods have been more important to her than flavors. Even at 18 she still leaves the crusts of bread because she dislikes the "feel" of them.

Jane has been a fast grower. She has been tall for her age, with broad shoulders and a good physique. At 18 she is 5 feet 9½ inches tall. At times she may have longed to be petite for she has always tended to like little girls. During adolescence, like most girls, she has wanted to be slim. She has watched her weight carefully and has refused to eat certain foods she liked in an attempt to lose weight. During her early school years she had some trouble with her teeth and later, upon hearing that "cokes" and candy were bad for teeth, she stoically gave them up. This was only one evidence of her strong determination.

She has a fine intelligence and has always made excellent progress in school. Entrance to

school presented no difficulty to Jane. Even as early as school entrance she could care for herself and her twin as well. When the girls reached the sixth grade they were sent to separate schools for two years because Jane tended to dominate her sister, who needed to learn to be on her own. While in intermediate school Jane was put on hall duty. This was unfortunate because it accentuated her desire to be the center of attention. The natural interest in self which all children have was stronger in Jane than in many others. Some of her peers helped her none too gently to become aware of this trait, and an understanding counselor soon sensed the situation and promoted her to another duty in which she was less conspicuous. Her scholastic achievement was consistently high and, finally, she was graduated from high school in the top 5 per cent of her class of 500 boys and girls. Her intellectual interests have been broad. She reads the National Geographic and Reader's Digest regularly. In high school she attended a club in which international affairs were discussed and was on the staff of the school paper, for which she did much of the art work. She has been especially interested in design and looks forward to making that her profession.

During the summer before entering college she worked in a department store where her alertness, independence and perserverance won her the admiration of her employer and an offer for work during the Christmas holidays. She saved enough from her earnings to buy all her clothes for college. Spending her money wisely was nothing new for Jane. She had long been a good manager because her wise and understanding family had given her previous experience in selecting her own clothes. While Jane had never been given a set allowance, nor was she "on a budget," she had learned the value of money and had acquired the ability to buy wisely by living in a family where value had been learned through living.

While Jane was the dominant twin, her sister made friends more easily. From early childhood Jane had the frequent experience of seeing her sister chosen while she was left behind. In spite of this she has always been devoted to her sister and has never been jealous when she was not included. She has always been eager to have friends, has great interest in knowing people and learning all about them and is inclined to champion the underdog. When her interest in boys developed in adolescence she became wholeheartedly absorbed and for a time devoted all of her energies to this new interest. However, she has never been as popular with the boys as her sister, probably because of her critical attitude toward the boys she dates and her appalling bluntness. She is learning, however, to be tactful and to keep her critical comments to herself. Like most adolescents, Jane desires above everything else to be one of a group. To be left out is a bitter experience. She also has the fear, common to many young people, that she may not marry. To her marriage is the most important goal to be achieved.

Jane at 18 is a charming girl who still is interested primarily in herself, but who has a staunch loyalty and affection for her family. She is extremely curious about people and things, has a particular interest that will lead to a vocation, has achieved considerable independence, and has an inner drive that will carry her over many an obstacle. She is well on her way to meeting the tests of life demanded of a mature person. She was indeed fortunate to grow up in a family with a sound philosophy of life, where the children had the security of understanding and love combined with sound discipline and ample opportunity to "try their wings."

EXPERIENCES TO VITALIZE CLASSWORK

1. Write a biographical sketch of some young adult whom you know well. Trace patterns of growth and the influences that molded them.
2. Make specific suggestions for changes in schedule, curriculum and methods of teaching that would make it possible to utilize better our present knowledge of child development in:
   a. Kindergarten and early elementary grades.
   b. Upper elementary or intermediate grades.
   c. High schools.
3. Have different members of the class select different cases in your reference books or of people you know well enough to have relevant information and report these to the class. Discuss principles you have learned in this course that apply in these cases.

LIST OF FILMS AND FILMSTRIPS

The following films and filmstrips may be useful with this text. It is suggested that films be previewed and an introduction be given to the class before showing in order to guide the student's observations.

The distributors of the films are listed at the end. However, films frequently may be obtained from local libraries or borrowed from universities with large film libraries.

CHAPTER 1

He Acts His Age (McGraw-Hill), 13 minutes.
Typical behavior of children at ages 1 to 15 years.

Principles of Development (McGraw-Hill), 17 minutes.
Fundamentals of growth and change from early infancy through childhood. Demonstrates basic principles of growth and development.

They Grow Up So Fast (American Association for Health), 27 minutes. Color.
Covers general growth.

CHAPTER 2

Heredity (Encyclopaedia Britannica), 11 minutes.
Animated charts of Mendelian laws in animals.

Heredity and Prenatal Environment (McGraw-Hill), 21 minutes.
Cell growth and heredity; development from conception to delivery.

Heredity and Family Environment (McGraw-Hill), 9 minutes.
Case of a high school student demonstrates the joint action of heredity and family environment.

Heredity and Environment (Coronet), 11 Minutes.
Gives the full meaning of heredity, which gives an individual certain basic capabilities, and of environment, which helps to determine the extent and direction of the use of these capacities.

The Endocrine System (Encyclopaedia Britannica Films), 11 minutes.
Nature and function of endocrines; animated diagrams.

First as a Child (Southern Education Film Production Service for Virginia Department of Health and United States Children's Bureau), 20 minutes.
Story of a crippled boy who receives treatment and resumes an active part in his home and community.

First Steps (United Nations), 11 minutes.
Camp as a place where children learn to walk again.

CHAPTER 3

Children's Emotions (McGraw-Hill), 22 minutes.
Major causes of fear, anger, jealousy in young children. The parental role in handling them.

When Should Grownups Stop Fights? (New York University Film Library), 15 minutes.
Presents situations designed to stimulate discussion of adult role in children's aggressive behavior.

Toward Emotional Maturity (McGraw-Hill), 11 minutes.
Shows something of the nature of emotions and how an 18 year old girl learned to manage hers.

Emotional Health (McGraw-Hill), 20 minutes.
Emotional upsets are common in adolescence. Discusses when professional help is needed.

Administration of Projective Tests (Pennsylvania State University), 19 minutes.
Includes several tests, but not the Rorschach.

Angry Boy (International Film Bureau), 33 minutes.
A boy steals. A child guidance clinic traces the reasons, including unconscious motivations.

Fears of Children (Mental Health Film Board), 30 minutes.
What happens when a mother coddles and a father expects too much of a child.

Understand Your Emotions (Coronet), 13 minutes.

CHAPTER 4

Food for Freddy (Canadian Film Institute), 17 minutes.
Healthy 9 year old Freddy's food experiences at home and at school. Detailed film presentation of Canada's guide to good eating.

Let's Teach Better Nutrition (Filmstrip) (Department of Nutrition, Harvard School of Public Health), 35 minutes.
Demonstration of the way a school community may develop a nutrition education program.

The School That Learned to Eat (General Mills), 20 minutes.
Nutrition education built around the school lunch.

Child Care and Development (McGraw-Hill), 17 minutes.
The habits of daily care that insure a happy, healthy child.

Your Child's Sleep (British Information Service), 23 minutes.
Analyzes a child's difficulties in going from active play to sleep and explains the role that dreams play in the child's developing mind. Gives some good suggestions for helping children to relax and accept sleep.

It's All in Knowing How (Canadian Film Institute), 13½ minutes. Color.
How a teen-ager overcame his poor eating habits with the aid of his parents, teachers and friends.

CHAPTER 5

Baby Meets His Parents (Encyclopaedia Britannica), 11 minutes.
Personality as affected by heredity, but especially by the first year of life with parents.

Preface to a Life (United World Films), 29 minutes.
Personality as affected by attitudes, actions and dreams of parents and by contacts with family, friends and neighbors.

Sibling Rivalries and Parents (McGraw-Hill), 11 minutes.
Sibling conflicts; the role of parents in causing and in handling them.

Helping the Child To Accept the Do's and the Dont's (United World Films), two films, 11 minutes each.
How to help children achieve courage and caution and other desirable behavior growth.

The Teens (National Film Board of Canada), 28 minutes.
Stresses parental role in guiding teen-agers.

Sibling Relations and Personality (McGraw-Hill), 22 minutes.
The relations of siblings as they grow up; individual differences.

Problem of Pupil Adjustments. Part I, The Dropout: A Case Study (McGraw-Hill), 20 minutes.
When the school fails to meet the needs of an individual child.

Teacher Observations of School Children (Metropolitan Life), 18 minutes.

Angry Boy (Mental Health Film Board), 33 minutes.
How a child guidance clinic helps a boy in trouble.

CHAPTER 6

The City (Museum of Modern Art), 33 minutes.
Impacts of city living upon human beings in unplanned cities, as contrasted to cities planned to meet the needs of children and adults.

Bathing Babies in Three Cultures (New York University Film Library), 9 minutes.
Mother-child relationships during infant bathing in New Guinea, Bali and modern America.

Social Acceptability (McGraw-Hill), 20 minutes.
The effects of nonacceptance by her peers upon the personality of a high school girl.

CHAPTER 7

Life with Baby (March of Time), 18 minutes.
Growth in body proportions and motor controls, with Dr. Gesell as commentator.

Physical Aspects of Puberty (McGraw-Hill), 19 minutes.
Physiological growth processes for boy and girl; some of the usual problems, such as those of late-maturing boy and early-maturing girl.

Human Growth (E. C. Brown Trust Company), 19 minutes.
The Oregon School of Medicine explains to a biology class what occurs as the body matures in adolescence.

Human Reproduction (McGraw-Hill), 21 minutes.
Explains in an advanced manner functions of male and female reproductive organs; how menstruation, fertilization, pregnancy and birth occur.

CHAPTER 8

The Embryology of Human Behavior (International Film Bureau), 18 minutes. Color.
Development of eye control and eye-hand coordination from a few weeks after conception through the early years of life.

Life Begins (Encyclopaedia Britannica), 60 minutes.
Dr. Gesell's work at Yale University. A classical record of infant development from birth to 18 months.

Growth of Adaptive Behavior (Encyclopaedia Britannica), 8 minutes.

Development of gross motor control from birth through the first five years.

Growth of Adaptive Behavior (Encyclopaedia Britannica), 11 minutes.

Development of the child's finer motor coordinations during the first five years.

CHAPTER 9

How to Think (Coronet), 10 minutes.

Explains the elements of concentration, memory and logical reasoning.

Testing the I.Q. (International Film Bureau), 10 minutes.

Principles of the Stanford-Binet Test; its administration and the calculation of the I.Q.

Terrible Twos and Trusting Threes (National Film Board of Canada), 20 minutes.

Life with Twos and Threes; how they learn to control their bodies and develop their minds and personalities.

Frustrating Fours and Fascinating Fives. (National Film Board of Canada), 22 minutes.

Life with Fours and Fives; how they learn to control their bodies and develop their minds and personalities.

The Challenge of the Gifted (McGraw-Hill), 12 minutes.

A community undertakes a program to meet the special problems and needs of the gifted child.

CHAPTER 10

Life with Baby (March of Time), 18 minutes.

Shows development of sense perceptions and language as well as motor growth. If not used earlier is appropriate here.

How to Concentrate (Coronet), 10 minutes.

The importance of imagination to intellectual development. How to develop imagination.

CHAPTER 11

Learning Is Searching (New York University Film Library), 30 minutes.

A third grade schoolroom situation showing ways to help children search for information and solve their own problems.

Child at Play (Teachers College, Columbia University), 18 minutes.

Undirected play of a 3 year old conversing with play therapist, with strange children of different ages and with child friend.

Why Can't Jimmy Read? (Syracuse University), 17 minutes.

CHAPTER 12

Children Growing Up with Other People (British Information Service), 23 minutes.

Each person is unique. The central problem of adjustment is maintaining individuality while adjusting to other people.

It Takes All Kinds. (McGraw-Hill), 20 minutes.

An old film with outmoded cars and clothes, it nevertheless clearly portrays different types of personality reactions to a stereotyped situation. It leads the viewer to check himself against the different types.

Terrible Twos and Trusting Threes (see Chapter 9).

Frustrating Fours and Fascinating Fives (see Chapter 9).

These portray personality stages at these ages.

From Sociable Six to Noisy Nine. (National Film Board of Canada), 22 minutes.

Interests, activities and personality characteristics of boys and girls of these ages.

From Ten to Twelve (National Film Board of Canada), 26 minutes.

Interests, activities and personalities of these ages. Sex differences in development.

Improve Your Personality (Coronet), 11 minutes.

How to develop, adapt and adjust personality. Encourages thought about and discussion of the viewer's own personality.

CHAPTER 13

Social Development (McGraw-Hill) 17 minutes.

Social behavior at different age levels; the reasons underlying changes in behavior as development proceeds.

Developing Friendships (Coronet), 11 minutes.

Development and maintenance of friendships, especially among young people; shows individual differences.

Developing Leadership (Coronet), 11 minutes.

A high school boy demonstrates good leadership in organizing classmates to meet a crisis in a neighboring flood-stricken town.

Developing Self-reliance (Coronet), 11 minutes.

Suggestions for doing this.

Shyness (McGraw-Hill), 23 minutes.

Three shy children; how the most typical one is helped to become an active member of a group.

Improve Your Personality (Coronet), 9 minutes (see Chapter 12).

CHAPTER 14

Social-Sex Attitudes in Adolescence (McGraw-Hill), 22 minutes.

The growing understanding of the meaning of sex in the teen-ager.

Marriage Is a Partnership (Coronet), 16 minutes.

A positive approach to the realities of marriage.

Marriage Today (McGraw-Hill), 22 minutes.

Physical and psychological companionship for three couples of differing personalities.

When Should I Marry? (McGraw-Hill), 19 minutes.

The experiences of two couples who married at an early age.

Prenatal Care (Medical Films, Inc.), 23 Minutes.

Modern obstetrical advice on how best to prepare for the birth of their baby shown with three young pregnant women.

A Normal Birth (Medical Films, Inc.) 11 minutes.

A photographic record of a "natural childbirth." Demonstrates how proper preparation of the mother contributes to the success of birth for her and her child. This and the above film are being used widely at the college level with both men and women students as preparation for marriage.

Counseling: Its Tools and Techniques (Vocational Guidance), 22 minutes.

Well-trained counselor at work; tools and techniques to use in counseling and how to use them to advantage.

Distributors of Educational Films

American Association for Health, Physical Education and Recreation, Washington, D. C.
Almanac Films, 516 Fifth Ave., New York, N. Y.
American Medical Association Film Service, 535 N. Dearborn Ave., Chicago, Ill.
Association Films, Inc., 347 Madison Ave., New York, N. Y., 10017.
Brandon Films, Inc., 200 W. 57th St., New York, N. Y., 10019.
E. C. Brown Trust Company, 220 S. W. Alder St., Portland, Ore.
British Information Service, 30 Rockefeller Plaza, New York, N. Y., 10029.
Canadian Film Institute, Contemporary Films, Inc., 13 E. 37th St., New York, N. Y., 10016.
Canadian National Film Board, 1270 Avenue of Americas, New York, N. Y., 10020.
Castle Films, United World Films, Inc., 1445 Park Ave., New York, N. Y., 10029.
Coronet Instructional Films, Coronet Building, Chicago, Ill., 60604.
Educator's Guide to Free Films., Educator's Progress Service, Randolph, Wis., published yearly.
Educator's Guide to Free Slidefilms., Educator's Progress Service., Randolph, Wis., published yearly.
Encyclopaedia Britannica Films, 1150 Wilmette Ave., Wilmette, Ill.
Films, Inc., 202 E. 44th St., New York, N. Y., 10017.
General Mills, Inc., 400 Second Ave., Minneapolis 1, Minn.
Harvard School of Public Health, Department of Nutrition, 695 Huntington Ave., Boston 15, Mass.
International Film Bureau, 57 E. Jackson Blvd., Chicago, Ill., 60604.
Life Filmstrips, Time and Life Bldg., Rockefeller Center, New York, N. Y., 10020.
McGraw-Hill Book Company, Text Film Dept., 330 W. 42nd St., New York, N. Y., 10036.
March of Time Forum Films, 369 Lexington Ave., New York, N. Y., 10017.
Medical Films, Inc., 116 Natoma St., San Francisco, Calif., 94105.
Mental Health Film Board, Film Service Dept., 166 E. 38th St., New York, N. Y., 10016.
Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y., 10010.
Museum of Modern Art, 11 W. 53rd St., New York, N. Y., 10019.
Paramount Pictures: Teaching Film Custodians, Inc., 25 W. 43rd. St., New York, N. Y., 10036.
Social Security Administration, Department of Health, Education, and Welfare, Washington, D.C.
Southern Educational Film Production Service, Virginia State Department of Health: Film Program Services. On loan for all state health departments.
United Nations: Films and Visual Information Division, United Nations, New York, N. Y., 10029.
U. S. Dept. of the Navy, Bureau of Medicine and Surgery, Washington 25, D. C.
United World Films, Inc., 1445 Park Ave., New York, N. Y., 10029.
Vocational Guidance Films, 215 E. 3rd St., Des Moines 9, Iowa.

Films may be purchased or rented from the companies listed above. Most of them may be rented from such agencies as:

The Film Center, University of California, Berkeley, Calif.
The Audio-Visual Center, Chatham College, Pittsburgh, Penn., 15232.
The Communications Materials Center, Columbia University Press, 2960 Broadway, New York, N. Y., 10027.
The Film Center, Indiana Teachers College, Bloomington, Ind.
The Audio-Visual Bureau, Indiana University, Bloomington, Ind.
The Film Center, University of Illinois, Urbana, Ill.
The Cinema Register, Pennsylvania State University, University Park, Penna.
Teachers College, Columbia University, 525 W. 120th St., New York, N. Y., 10027.

BIBLIOGRAPHY

Abbe, A. E.: Maternal attitudes toward child behavior and their relationship to the diagnostic category of the child. J. Genet. Psychol., *92*:167-173, 1958.

Abel, H., and Sahin Kaya, R.: Emergence of sex and race friendship preferences. Child Development, *33*:939-943, 1962.

Aberle, D. F., and Naegele, K. D.: Middle-class father's occupational role and attitudes toward children. Am. J. Orthopsychiat., *22*:366-378, 1952.

Abraham, W.: Common Sense About Gifted Children. New York, Harper & Bros., 1958.

Acheson, R. M.: A method of assessing skeletal maturity from radiographs. J. Anat., *88*:498-508, 1954.

Acheson, R. M., and Dupertuis, C. W.: The relationship between physique and rate of skeletal maturation in boys. Hum. Biol., *29*:167-193, 1957.

Ackerman, N. W.: The principle of shared responsibility of child-rearing. Int. J. Soc. Psychiat., *2*: 280-291, 1957.

Ackerman, N. W.: The Psychodynamics of Family Life. New York, Basic Books, Inc., 1958.

Adams, E. B., and Sarason, I. G.: Relations between anxiety in children and their parents. Child Development, *34*:237-246, 1963.

Adams, J. M., et al.: Viral infections in the embryo. Am. J. Dis. Child., 92:109-114. 1956.

Adler, A.: The Education of the Individual. New York, Philosophical Library, Inc., 1958.

Ahvenainen, E. K., and Kunnas, M.: Mortality of premature infants by weight groups and age on admission. Ann. paediat. Fenniae, *8*:153-165, 1962.

Aikawa, R., and Horiuchi, S.: A study in the development of whys: I. Investigations in the areas of whys which arise as a process of cognizing reality. Jap. J. Educ. Psychol., *10*:139-149, 1962.

Ainsworth, L. H.: Rigidity, insecurity, and stress. J. Abnorm. & Social Psychol., *56*:67-74, 1958.

Ainsworth, M. D.: The development of infant-child interaction among the Ganda. Paper read at Tavistock Study Group on Mother-Infant Interaction, London, 1961.

Ainsworth, M. D.: Patterns of attachment behavior shown by the infant in interaction with his mother. Merrill-Palmer Quart., *10*(1):51-58, 1964.

Albert, R. S., and Brigante, T. R.: The psychology of friendship relations: social factors. J. Soc. Psychol., *56*:33-47, 1962.

Alcock, A. T.: Quoted in, War strain in children. Brit. M. J., Jan. 25, 1941.

Aldous, J., and Kell, L.: A partial test of some theories of identification. Marriage & Family Living, *33*: 15-19, 1961.

Alexander, M. F.: Successfully Finding Yourself and Your Job. New York, Harper & Bros., 1959.

Allen, R. M.: Personality Assessment Procedures. New York, Harper & Bros., 1958.

Allensmith, W.: The Learning of Moral Standards. Doctoral Dissertation Series, Pub. No. 8266. Ann Arbor, Mich., University of Michigan Microfilms, 1954.

Allensmith, W.: Moral standards: II. The learning of moral standards. *In* Miller, R., and Swanson, G. E. (ed.): Inner Conflict and Defense. New York, Henry Holt & Co., 1960, pp. 141-176.

Allport, G.: The Nature of Prejudice. Cambridge, Mass., Addison-Wesley, 1954.

Almquist, H. J.: Nutritional applications of the amino acids. *In* Greenberg, D. M.: Amino Acids and Proteins: Theory, Methods, Applications. Springfield, Ill., Charles C Thomas, 1951.

Alper, A. E., and Horne, B. M.: Changes in I.Q. of a group of institutionalized mental defectives over a period of two decades. Am. J. Ment. Deficiency., *64*:472-475, 1959.

Altland, J. K., and Brush, B. E.: Goiter prevention in Michigan; results of 30 years' voluntary use of iodized salt. J. Michigan M. Soc., *51*:985-989, 1952.

Amatora, Sister Mary: Expressed interests in later childhood. J. Genet. Psychol., *96*:327-342, 1960.

Amatora, Sister Mary: Similarity in teacher and pupil personality. J. Psychol., *37*:40-50, 1954.

Ambrose, J. A.: The development of smiling response in early infancy. *In* Foss, B. M. (ed.): Determinants of Infant Behavior. New York, John Wiley & Sons, Inc., 1961.

American Academy of Pediatrics: Report of the Committee on the Control of Infectious Diseases. Evanston, Ill., American Academy of Pediatrics, 1957.

American Camping Magazine (all issues). American Camping Association, 343 Dearborn St., Chicago, Ill.

American Council on Education: Helping Teachers Understand Children. American Council on Education, 744 Jackson Pl., N. W., Washington, D. C., spring issue, 1963.

Ames, L. B., Métraux, R. W., and Walker, R. N.: Adolescent Rorschach Responses: Developmental Trends from Ten to Sixteen Years. New York, Paul B. Hoeber, Inc., 1959.

Anastasi, A.: Differential Psychology: Individual and Group Differences in Behavior. Rev. ed. New York, The Macmillan Co., 1958.

Anastasi, A.: Intelligence and family size. Psychol. Bull., *53*:187-209. 1956.

Anderson, A.: Some observations on birth weights. Med. Off., *89*:15-17, 1953.

Anderson, C. C.: A developmental study of dogmatism during adolescence with reference to sex differences. J. Abnorm. & Social Psychol., *65*:132-135, 1962, a.

Anderson, C. C.: The relationship between inhibition of motor response and cognitive performance. Brit. J. Educ. Psychol., *32*:234-240, 1962, b.

Anderson, J. E.: The prediction of adjustment over time. *In* Iscoe, I., and Stevenson, H. W. (ed.): Personality Development in Children. Austin, Texas, University of Texas Press, 1960.

Anderson, J. E.: Dynamics of development: System in process. *In* Harris, D. B. (ed.): The Concept of Development. Minneapolis, University of Minnesota Press, 1957.

Anderson, M., et al.: Growth of the normal foot during childhood and adolescence. Length of the foot and interrelations of foot, stature and lower extremities as seen in serial records of children between 1-18 years of age. Am. J. Phys. Anthropol., *14*:287-308, 1956.

Angell, D. B.: Differences in social behavior between elementary school children who have attended nursery school and those who have not attended nursery school. Unpublished master's thesis, N. Texas State College, 1954.

Ansari, A., and Ghose, B.: A study of family attitudes of children with contrasting socio-economic background. Educ. & Psychol., *4*:90-102, 1957.

Antonovsky, H. F.: A contribution to research in the area of the mother-child relationship. Child Development, *30*:37-51, 1959.

Appell, C. T.: Television viewing and the preschool child. Marriage & Family Life, *25*(3):311-318, 1963.

Appell, G., and Myriam, D.: Case notes on Monique. *In* Foss, B. M. (ed.): Determinants of Infant Behavior. New York, John Wiley & Sons, Inc., 1962. pp. 101-104.

Applezweig, D. G.: Childhood and mental health: The influence of the father in the family setting. Merrill-Palmer Quart., *7*(2):1, 1961.

Ardeleanu, I., Tănăsescu, G. H., Chiriac-Teodoresen, et al.: [The study of certain characteristics of primary dentition in children below three years of age in Rumania.] Pediatria, *11*:261-272, 1962.

Arnold, F. A., et al.: Effect of fluoridated public water supplies on dental caries prevalence. Seventh year of Grand Rapids-Muskegon study. Pub. Health Rep., 68:141-148, 1953.

Aron, M. L.: The nature and incidence of stuttering among a Bantu group of school-going children. J. Speech & Hearing Disorders *27*:116-128, 1962.

Aronfreed, J.: The nature, vanity and social patterning of moral responses to transgression. J. Abnorm. & Social Psychol., *63*:223-241, 1961.

Aronfreed, J.: The effect of experimental socialization paradigms upon two moral responses to transgression. J. Abnorm. & Social Psychol. *66*:437-448, 1963.

Aronfreed, J.: The origin of self-criticism. Psychol. Rev., *71*:(3):193-218, 1964.

Aronfreed, J., Cutick, R. A., and Fagen, S. A.: Cognitive structure, punishment, and nurturance in the experimental induction of self-criticism. Child Development, *34*:281-294, 1963.

Arter, R. M. The effects of prejudice on children. Children, *6*:185-189, 1959.

Ashley, D. J. B.: Human Intersex. Baltimore, The Williams & Wilkins Co., 1962.

Association for Childhood Education International: Using What We Know for Children in the School, the Home, the Community. Washington, D.C., Association for Childhood Education International, 1951.

Association for Supervision and Curriculum Development: Creating a Good Environment for Learning. The 1954 Yearbook. Washington, National Education Association, 1954.

Astington, E. Personality assessments and academic performance in boys' grammar school. Brit. J. Educ. Psychol., *30*:225-236, 1960.

Attitude studies of young drivers. New York Times, May 18, 1958.

Ausubel, D. P.: Introduction to a threshold concept of primary drives. J. Genet. Psychol., *56*:209-229, 1950.

Ausubel, D. P.: Prestige motivation of gifted children. Genet. Psychol. Monogr. *43*:53-116, 1951.

Ausubel, D. P.: Ego Development and the Personality Disorders. New York, Grune & Stratton, Inc., 1952.

Ausubel, D. P.: Relationship between shame and guilt in the socializing process. Psychol. Rev., 62:378-390, 1955.

Ausubel, D. P.: Theory and Problems of Adolescent Development. 2nd ed. New York, Grune & Stratton, Inc., 1958,a.

Ausubel, D. P.: Theory and Problems of Child Development. New York, Grune & Stratton, Inc., 1958,b.

Ausubel, D. P., et al.: Prestige suggestion in children's art preferences. J. Genet. Psychol., *89*:85-93, 1956.

Azrin, N. H., Holz, W. C. and Hake, D. F.: Fixed-ratio punishment. J. Exp. Anal. Behav., *6*:141-148, 1963.

Baer, D. M.: Effect of withdrawal of positive reinforcement on an extinguishing response in young children. Child Development, *32*:67-74, 1961.

Baer, M. J., Torgoff, I. H., and Harris, D. J.: Differential impact of weight and height on Wetzel developmental age. Child Development, *33*:737-750, 1962.

Bakal, C.: Screen test for tomorrow's schoools. The Saturday Review of Literature, Aug. 24, 1957.

Baker, H. J.: Introduction to Exceptional Children. Rev. ed. New York, The Macmillan Co., 1953.

Baker, J. W., and Holzworth, A.: Social histories of successful and unsuccessful children. Child development, *32*:135-149, 1961.

Bakwin, H.: Enuresis, Pediat. Clin. North America, Philadelphia, W. B. Saunders Co., August, 1955.

Bakwin, H.: The overuse of vitamins in children. J. Pediat., *59*:154-161, 1961.

Bakwin, H., and Bakwin, R. M.: The Clinical Management of Behavior Disorders in Children. 2nd ed. Philadelphia, W. B. Saunders Co., 1960.

Baldwin, A. L.: Behavior and Development in Childhood. New York, Dryden Press, 1955.

Baldwin, A. L.: The Parsonian Theory of Personality. *In* Black, M. (ed.): The Social Theories of Talbott Parsons. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1961.

Baldwin, A. L., and Levin, H.: Effects of public and private success or failure on children's repetitive motor behavior. Child Development, *29*:363-372, 1958.

Baldwin, J. W.: The relationship between teacher-judged giftedness, a group intelligence test and an individual intelligence test with possible gifted kindergarten pupils. Gifted Child Quart., *6*:153-156, 1962.

Balser, B. H.: Psychotherapy of the Adolescent. New York, International Universities Press, 1957.

Bandura, A., and Huston, A. C.: Identification as a process of incidental learning. J. Abnorm. & Social Psychol., *63*:311-318, 1961.

Bandura, A., Ross, D. and Ross, S. A.: Transmission of aggression through initiation of aggressive models. J. Abnorm. & Social Psychol., *63*:575-582, 1961.

Bandura, A., Ross, D., and Ross, S. A.: Imitation of film-mediated aggressive models. J. Abnorm. & Social Psychol., *66*:(1): 3-11, 1963.

Bandura, A., and Walters, R. H.: Adolescent Aggression. New York, The Ronald Press Co., Inc., 1959.

Bandura, A., and Walters, R. H.: Aggression. Nat'l. Soc. Stud. Educ. Yearbook LXII, Part I, 1963,a, pp. 364-415.

Bandura, A., and Walters, R. H.: Social Learning and Personality Development. New York, Holt, Rinehart & Winston, 1963,b.

Bandura, A., and Walters, R. H.: The Social Learning of Deviant Behavior: A Behavioristic Approach to Socialization. New York, Holt, Rinehart & Winston, 1963,c.

Banks, A. J.: Puberty. Brit. Med. J., *1*:193-196, 1958.

Barbe, W. B.: Evaluation of special classes for gifted children. Except. Child, *22*:60-62, 1955.

Barker, R. G., et al.: The Psychological Ecology of a Small Town, in Dennis, W. (ed.): Readings in Child Psychology. New York, Prentice-Hall, Inc., 1951.

Barker, R. G., and Wright, H. F.: The Midwest and Its Children. Evanston, Ill., Row, Peterson & Co., 1955.

Barnard, J. W., Zimbardo, P. G., and Sarason, S. B.: Anxiety and verbal behavior in children. Child Development, *32*:379-392, 1961.

Barnes, R.: The Uses of Written Language by Junior High School Pupils. Unpublished thesis for Master's degree, University of Minnesota, Minneapolis.

Barron, F.: Creative Vision: An expression in writing and painting. *In* Institute of Personality Assessment and Research: The Creative Person. University of California and University Extension, Liberal Arts Dept., pp. II - I - II - 19, 228, 1961.

Bartlett, C. J., and Horrocks, J. E.: A study of the needs-status of adolescents from broken homes. J. Genet. Psychol., *93*:153-159, 1958

Bartlett, F.: Remembering. Cambridge, Cambridge University Press, 1932.

Bauer, I. L.: Attitudes of children with rheumatic fever. J. Pediat., *40*:796-806, 1952.

Baugh, V. S., and Carpenter, B. L.: A comparison of delinquents and nondelinquents. J. Social Psychol., *56*:73-78, 1962.

Baumgartner, B. B.: Helping the Trainable Mentally Retarded Child. New York, Columbia University Press, 1960.

Baumgartner, L.: The public health significance of low birth weight in the U.S.A. Bull. WHO, *26*:175-182, 1962.

Baus, G., et al.: Group sessions for parents of children with epilepsy. J. Pediat., *52*:270-273, 1958.

Bayer, L. M., and Bayley, N.: Growth-pattern shifts in healthy children: spontaneous and induced. J. Pediat., *62*:631-645, 1963.

Bayer, L. M., and Snyder, M. M.: Illness experience of a group of normal children. Child Development, *21*:93-120, 1950.

Bayley, N.: Size and body build of adolescents in relation to rate of skeletal maturing. Child Development *14*:51-90, 1943,a.

Bayley, N.: Skeletal maturing in adolescence as a basis for determining percentage of completed growth. Child Development, *14*:5-46, 1943,b.

Bayley, N.: Some increasing parent-child similarities during the growth of children. J. Educ. Psychol., *45*:1-21, 1954.

Bayley, N.: On the growth of intelligence. Am. Psychologist, *10*:805-818, 1955.

Bayley, N.: Growth curves of height and weight by age for boys and girls, scaled according to physical maturity. J. Pediat. *48*:187-194, 1956,a.

Bayley, N.: Individual patterns of development. Child Development, 27(1): 66, 1956,b.

Bayley, N., and Bayer, L. M.: The assessment of somatic androgyny. Am. J. Phys. Anthropol., *4*:433-461, 1946.

Bayley, N., and Oden, N. H.: The maintenance of intellectual ability in gifted adults. J. Gerontol., *10*:91-107, 1955.

Bayley, N., and Pinneau, S. R.: Tables for predicting adult height from skeletal age. Revised for use with the Greulich-Pyle hand standards. J. Pediat., *40*: 423-441, 1952.

Bealer, R. C., Willits, F. K., and Maida, P. R.: The rebellious youth subculture—a myth. Children, *11* (2): 43-38, 1964.

Beard, R. M.: The nature and development of concepts, II. Educ. Rev., *13*:12-26, 1960.

Becker, S. W., and Carroll, J.: Ordinal position and conformity. J. Abnorm. & Social Psychol., *65*:129-131, 1962.

Becker, W. C., Peterson, D. R., Lurias, Z., Shoemaker, D. J., and Hellmer, L. A.: Relations of factors derived from parent-interview ratings to behavior problems of five-year-olds. Child Development, *33*(3): 509-536, 1962.

Beilin, H.: Teachers' and clinicians' attitude toward the behavior problems of children: A reappraisal. Child Development, *30*:9-25, 1959.

Beilin, H., and Franklin, I.: Logical operations in area and length measurement: age and training effects. Child Development, *33*:607-618, 1962.

Bell, R. O.: Retrospective attitude studies of parent-child relations. Child Development, *29*:324-338, 1958.

Bell, R. Q.: Relations between behavior manifestations in the human neonate. Child Development, *31*:463-477, 1960.

Bell, W. W., and Vogel, E. F. (ed.): A Modern Introduction to the Family. Chicago, The Free Press of Glencoe, 1960.

Belmont, L., and Birch, H. G.: Lateral dominance and right-left awareness in normal children. Child Development, *34*:257-270, 1963.

Bennett, I.: Delinquent and Neurotic Children. New York, Basic Books, Inc., 1961.

Benton, A. L.: Behavioral indices of brain injury in school children. Child Development, *33*(1): 199-208, 1962.

Benton, A. L., and Menefee, F. L.: Handedness and right-left discrimination. Child Development, *28*:237-242, 1957.

Berelson, B., and Steiner, G. A.: Human Behavior: An Inventory of Scientific Findings. New York, Harcourt, Brace & World, Inc., 1964.

Berkowitz, L.: Liking for the group and the perceived merit of the group's behavior. J. Abnorm. & Social Psychol., *54*(3): 353-357, 1957.

Berlyne, D. E.: The influence of the albedo and complexity of stimuli on visual fixation in the infant. Brit. J. Psychol., *49*: 315-318, 1958.

Berlyne, D. E.: Conflict, Arousal and Curiosity. New York, McGraw-Hill Book Co., Inc., 1960.

Berlyne, D. E.: Soviet research on intellectual processes in children. *In* Wright, J. C., and Kagan, J. (ed.): Basic Cognitive Processes in Children. Monogr. Soc. Res. Child Development, Serial 86, *28*(2):165-183, 1963.

Bettelheim, B.: The Informed Heart: Autonomy in Mass Age. Chicago, The Free Press of Glencoe, 1960.

Bibby, B. G.: Cariogenicity of foods. J.A.M.A., *177*: 316-321, 1961.

Biddle, B. B.: The present status of role theory. Columbia, Mo., Soc. Psychol. Lab., University of Missouri, August, 1961.

Biesanz, J., and Biesanz, M.: Modern Society. 2nd ed., Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1959.

Bijou, S. W.: Theory and research in mental (developmental) retardation. Psychol. Res., *13*:95-110, 1963.

Bijou, S. W., and Baer, D. M.: The laboratory experimental study of child behavior. *In* Mussen, P. H. (ed.): Handbook of Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960.

Bindra, D.: Components of general activity and the analysis of behavior. Psychol. Rev., *68*:205-215, 1961.

Bing, E.: Effect of childrearing practices on development of differential cognitive abilities. Child Development, *34*:631-648 1963.

Binning, G.: Earlier physical and mental maturity among Saskatoon public school children. Canad. J. Pub. Health, *49*:9-17, 1958.

Birch, H. G., and Lefford, A.: Intersensory Development in Children: Monogr. Soc. Res. Child Development, Series 89, *28*(5), 1963.

Birch, H. G., et al.: Meeting, American Orthopsychiatric Assoc., Los Angeles, March, 1962 (unpublished).

Black, M. (ed.): The Social Theories of Talbot Parsons. A Critical Examination. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1961.

Blankenship, J.: "Stuttering" in normal speech: A Letter to the Editor. J. Speech & Hearing Res., *7*(1):95, 1964.

Blattner, R.: Comments on Current Literature: Rheumatic fever. J. Pediat., *42*:129-131, 1953.

Blauvelt, H., and McKenna, J.: Capacity of the human newborn for mother-infant reaction. II. The Temporal dimensions of a neonate response. Psychiat. Res. Rep., *13*:128-147, 1960.

Blewett, G. W., and Schuck, C.: A comparison of the food consumption of men and women college students. J. Am. Dietet. A., *26*:525-528, 1950.

Block, J., and Thomas, H.: Is satisfaction with self a measure of adjustment? J. Abnorm. & Social. Psychol., *51*:254-259, 1955.

Blommers, P. K., Lotus, K. M., and Stroud, J. B.: The organismic age concept. J. Ed. Psychol., *46*:142-150, 1955.

Blommers, P. K., and Stroud, J. B.: Note on the organismic age concept. J. Educ. Psychol. *49*:106-107, 1958.

Blood, R. O., and Wolfe, D.: Husbands and Wives. Chicago, The Free Press of Glencoe, 1960.

Bloodstein, O.: The development of stuttering: I. Changes in nine basic features. J. Speech & Hearing Disorders, *25*:219-237, 1960, a.

Bloodstein, O.: The development of stuttering: II. Developmental phase. J. Speech & Hearing Disorders, *25*:366-376, 1960, b.

Bloodstein, O.: The development of stuttering: III. Theoretical and clinical implications. J. Speech & Hearing Disorders, *26*:67-82, 1961.

Blos, P.: On Adolescence: A Psychoanalytical Interpretation. Chicago, The Free Press of Glencoe, 1962.

Blough, T. B.: A critical analysis of selected research literature on the problems of school dropouts. Unpublished dissertation, University of Pittsburgh, 1956.

Bluemel, C. S.: Concepts of stammering: a century in review. J. Speech & Hearing Disorders, 25:24-32, 1960.

Blum, A.: The relationship between rigid-flexibility in children and their parents. Child Development, *30*:297-304, 1959.

Bobroff, A.: The stages of maturation in socialized thinking and in the ego development of two groups of children. Child Development, *31*:321-338, 1960.

Bock, E. W., and Burchinal, L. G.: Social status, heterosexual relations, and expected ages of marriage. J. Genet. Psychol., *101*:43-51, 1962.

Bodman, F. H.: War conditions and the mental health of the child. Brit. M. J., *II*:486-488, 1941.

Boehm, L., and Nass, M. L.: Social class differences in conscience development. Child Development, *33*:565-574, 1962.

Bonner, H.: Group Dynamics: Principles and Applications. New York, The Ronald Press Co., 1959.

Bonney, M. E., and Nicholson, E. L.: Comparative social adjustments of elementary school pupils with and without preschool training. Child development, *29*:126-133, 1958.

Bookwalter, K. W.: Grip strength norms for males. Research Quart., *21*:249-273, 1950.

Booth, E. G., Jr.: Personality traits of athletes as measured by MMPI. Research Quart., *29*:127-138, 1958.

Bornemann, E.: [Adolescent problems of our time.] Psychol. Rdsch., *9*:77-104, 1958.

Bornemann, E., and Böttcher, H.: [Youth in industry.] Psychol. Rdsch., *13*:77-103, 1962.

Borstelmann, L. J.: Sex of experimenter and sex-typed behavior of young children. Child Development, *32*:579-524, 1961.

Bossard, J. H. S., and Carter, W. T.: The Sociology of Child Development. 3rd ed. New York, Harper & Bros., 1960.

Boutourline, Y. H., Zoli, A., and Gallagher, J. R.: Events of puberty in 111 Florentine girls. Am. J. Dis. Child., *106*:568-577, 1963.

Bowlby, J., et al.: The effects of mother-child separation: A follow-up study. Brit. J. Med. Psychol., *29*:211-247, 1956.

Bowlby, J.: The nature of the child's tie to his mother. Internat. J. Psycho-Analysis, *39*, 1-34, 1958.

Bowman, P. H., et al.: Studying children and training counsellors in a community program. Suppl. Educ. Monogr. 38, 1953.

Boyd, J. D.: Clinical appraisal of growth in children. J. Pediat., *18*:289-299, 1941.

Boyne, A. W., et al.: Secular change in height and weight of British children, including an analysis of measurements of English children in primary schools, 1911-1953. Nutrition Abst. and Rev., *27*:1-18, 1957.

Brackville, Y.: Research in Infant Behavior: A Cross-Indexed Bibliography. Baltimore, The Williams & Wilkins Co., 1964.

Bradley, C.: Characteristics and management of children with behavior problems associated with organic brain damage. Pediat. Clin. North America. Philadelphia, W. B. Saunders Co., November, 1957.

Braen, B. B.: An evaluation of the Northwestern Infant Intelligence Test, Test B. J. Consult. Psychol., *25*:245-248, 1961.

Braine, M. D. S.: Piaget on reasoning: a methodological critique and alternative proposals. *In* Kesson, W., and Kuhlman, C. (ed.): Thought in the Young Child. Monogr. Soc. Res. Child Development, *27*:(2). Lafayette, Ind., Child Development Publications, 1962.

Brash, J. M., McKeag, H. T. A., and Scott, J. H.: The Aetiology of Irregularity and Malocclusion of the Teeth. London, W. I., 44 Hallam St., The Dental Board of the United Kingdom, 1956.

Brazelton, T. B., et al.: Emotional aspects of rheumatic fever in children. J. Pediat., *43*:339-358, 1953.

Breckenridge, M. E., and Murphy, M. N.: Growth and Development of the Young Child. 7th ed. Philadelphia, W. B. Saunders Co., 1963.

Brelicka, I., and Olechnowicz, H.: Treating children traumatized by hospitalization: A report from Poland. Children, *10*(5):194-195, 1963.

Brenner, A.: Nature and meaning of readiness for school. Merrill-Palmer Quart., *3*:114-135, 1957.

Bridges, W. H.: Sensory habituation and stimulation in the human neonate. Am. J. Psychiatry, *117*:991-996, 1961.

Briggs, T. H.: Praise and censor as incentives. School & Society, *26*:596-598, 1927.

Brim, O. G., Jr.: Family structure and sex role learning by children: A further analysis of Helen Koch's data. Sociometry, *31*:1-16, 1958.

Brim, O. G.: Personality development as role learning. *In* Iscoe, I., and Stevenson, H. W. (ed.): Personality Development in Children. Austin, Texas, University of Texas Press, 1960.

Brinkmann, E. H., and Brinkmann, R. A.: Group influences on the individual in the classroom: a case study. Merrill-Palmer Quart., *9*(3):195-204, 1963.

Brobeck, J. R.: Physiology of Hunger, Appetite and Satiety. *In* Wohl, M. G., and Goodhart, R. S. (ed.): Modern Nutrition in Health and Disease. Philadelphia, Lea & Febiger, 1955.

Brock, J. F., and Autret, M.: Kwashiorkor in Africa. WHO Monogr. Series No. 8. Geneva, World Health Organization, 1952.

Brodbeck, A. J.: The mass-media as a socializing agency. Paper read at American Psychological Association, San Francisco, Sept., 1955.

Broderick, C. B., and Fowler, S. E.: New patterns of relationship between the sexes among preadolescents. Marriage & Family Living, *23*:27-30, 1961.

Brody, S.: Patterns of Mothering: Maternal Influence during Infancy. New York, International Universities Press, Inc., 1956.

Broida, D. C.: Psychosocial aspects of epilepsy in children and youth. *In* Cruickshank, W. M. (ed.): Psychology of Exceptional Children and Youth. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1955.

Bronfenbrenner, U.: Family structure and development. Presidential address, Div. 7, American Psychological Association, Washington, D.C., September, 1958,a.

Bronfenbrenner, U.: Socialization and social class through time and space. *In* Maccoby, E. E., et al. (ed.): Readings in Social Psychology. New York, Henry Holt & Co., Inc., 1958,b.

Bronfenbrenner, U.: Freudian theories of identification and their derivatives. Child Development *31*:15-40, 1960,a.

Bronfenbrenner, U.: Identification and family structure. Unpublished research proposal, 1960, b.

Bronfenbrenner, U.: Discussion of papers in Symposium: Father Influence in the Family. Merrill-Palmer Quart., 7(2), 1961, a.

Bronfenbrenner, U.: Some familial antecedents of responsibility and leadership in adolescents. *In* Bass, B. M., and Petrillo, P. (ed.): Leadership and Interpersonal Behavior. New York, Holt, Rinehart & Winston, 1961,b., pp. 239-271.

Bronfenbrenner, U.: The Changing American Child—A Speculative Analysis. Merrill-Palmer Quart., *7*(2):73-84, 1961, c.

Bronshtein, A. I., Antonova, T. G., Kamenetskaya, A. G., Luppova, N. N., and Sytova, V. A.: On the development of the functus of analyzers in infants and some animals at the early stage of ontogenesis. *In* Problems of Evolution of Physiological Functions. O. T. S. Report No. 50-61066. Translation obtainable from U.S. Dept. of Commerce. Moscow, Acad. Science, 1958.

Brooks, R. M., and Goldstein, A. G.: Recognition by children of inverted photographs of faces. Child Development, *34*:1033-1040, 1963.

Brown, A. W., and Hunt, R. G.: Relations between nursery school attendance and teachers' ratings of some aspects of children's adjustment in kindergarten. Child Development, 32:585-596, 1961.

Brown, D. G.: Inversion and homosexuality. Am. J. Orthopsychiat., *28*:424-429, 1958.

Brown, G. D.: The development of diabetic children, with special reference to mental and personality comparisons. Child Development, *9*:175-183, 1938.

Brown, G. D., and Thompson, W. H.: The diabetic child. Am. J. Dis. Child., *59*:238-254, 1940.

Brown, J. L.: Differential hand usage in three-year-old children. J. Genet. Psychol., *100*:167-175, 1962.

Brown, J. W., et al.: Instruction: Materials and Methods. New York, McGraw-Hill Book Co., Inc., 1959.

Brozek, J.: Psychologic effects of thiamine restriction and deprivation in normal young men. Am. J. Clin. Nutrition, *5*:109-120, 1957.

Brozek, J., et al.: A study of personality of normal young men maintained on restricted intakes of vitamins of the B complex. Psychosom. Med., *8*:98-109, 1946.

Bruch, H.: The Importance of Overweight. New York, W. W. Norton & Co., Inc., 1957.

Bruck, M., and Bodwin, R. F.: The relationship between self-concept and the presence and absence of scholastic underachievement. J. Clin. Psychol., *18*:181-183, 1962.

Bruner, J. S.: Going beyond the information given. *In* Contemporary Approaches to Cognition: a symposium held at the University of Colorado. Cambridge, Harvard University Press, 1957, pp. 41-69.

Buehl, C. C., and Pyle, S. I.: The use of age at first appearance of three ossification centers in determining the skeletal status of children. J. Pediat., *21*:335-342, 1942.

Buell, P., et al.: Reorganizing to prevent and control disordered behavior. Ment. Hyg., *42*:155-194, 1958.

Burch, E. P.: Diseases of the eye. *In* McQuarrie, I., and Kelley, V. C. (ed.): Brennemann's Practice of Pediatrics. Vol. IV. Hagerstown, Md., W. F. Prior Co., Inc., 1959.

Burchinal, L. G.: Mothers' and fathers' differences in parental acceptance of children for controlled comparisons based on parental and family characteristics. J. Genet. Psychol., *92*:103-110, 1958.

Burchinal, L. G.: Research on young marriages: implications for family life education. Family Life Coordinator, *8*:6-24, 1960.

Burchinal, L. G., and Cowhig, J. D.: Rural youth in an urban society. Children, *10*(5):167-172, 1963.

Burchinal, L. G., and Rossman, J. E.: Relations among maternal employment indices and developmental characteristics of children. Marriage & Family Living, *23*:334-340, 1961.

Burley, R. R., Dobell, H. C., and Farrell, B. J.: Relations of power, speed, flexibility, and certain anthropometric measures of junior high school girls. Res. Quart. AAHPER, *32*:443-448, 1961.

Burns, N., and Cavey, L.: Age differences in empathic ability among children. Canad. J. Psychol., *11*: 227-230, 1957.

Burton, R. V., Maccoby, E. E., Allinsmith, W.: Antecedents of resistance to temptation in four-year-old children. Child Development *32*:689-710, 1961.

Burton, R. V., and Whiting, J. W. M.: The absent father and cross-sex identity. Merrill-Palmer Quart., *7*(2):85-95, 1961.

Caditz, S. B.: Effects of a forestry camp experience on the personality of delinquent boys. J. Clin. Psychol., *17*:78-81, 1961.

Caffey, J.: Pediatric X-ray Diagnosis. 3rd ed. Chicago, Year Book Publishers, Inc., 1956.

Caille, R. K.: Resistant Behavior of Preschool Children. Child Devel. Monogr. II. New York, Teachers College, Columbia University, 1933.

Caldwell, B. M.: Assessment of infant personality. Merrill-Palmer Quart., *8*(2):71-82, 1962.

Caldwell, B. M., and Hersher, L.: Mother-infant interaction during the first year of life. Merrill-Palmer Quart., *10*(2):119-128, 1964.

Canadian Council on Nutrition: A Dietary Standard for Canada Approved by the Canadian Council on Nutrition. Bull. 2. Canadian Council on Nutrition, 1950.

Cannon, P. R.: Importance of Proteins in Resistance to Infection, in Implications of Nutrition and Public Health in the Postwar Period. Proceedings of Conference, Children's Fund of Michigan. Detroit, 1944.

Cannon, W. B.: The Wisdom of the Body. New York, W. W. Norton & Co., Inc., 1939.

Caplan, G. (ed.): Prevention of Mental Disorders in Children. New York, Basic Books, Inc., 1961.

Cappa, D., and Schubert, D. G.: Do parents help gifted children read? J. Educ. Res., *56*:33-36, 1962.

Carothers, J. C.: The African Mind in Health and Disease. WHO Monogr. Series No. 17. Geneva, World Health Organization, 1953.

Carpenter, K. S.: Halfway houses for delinquent youth. Children, *10*(6):224-229, 1963.

Carter, T. M.: The play problems of gifted children. School & Society, May 10, 1958, pp. 224-225.

Carvalho, O.: [Contributions to the study of nail-biting in school children.] Pediat. Prat., *32*:299-310, 1961.

Case, D., and Collinson, J. M.: The development of formal thinking in verbal comprehension. Brit. J. Educ. Psychol., 32:103-111, 1962.

Casler, L.: Maternal Deprivation: A Critical Review of the Literature. Monog. Soc. Res. Child Development Serial No. 80, *26*(2), 1961.

Castenada, A., et al.: The children's form of the manifest anxiety scale. Child Development, *27*:317-326, 1956.

Cattell, R. B., and Coan, R. W.: Personality factors in middle childhood as revealed in parents' ratings. Child Development, *28*:439-458, 1957.

Cerf, B.: Books are here to stay. Saturday Evening Post, March 22, 1958.

Chance, J. E.: Independence training and first graders' achievement. J. Consult. Psychol., *25*:149-154, 1961.

Child Development Abstracts and Bibliography. Child Development Publications of the Society for Research in Child Development, Inc. Lafayette, Ind., Purdue University.

Children's Bureau: Abused Children. Children, *10*(5):202-203, 1963.

Childs, B., and Sidbury, T. B.: A survey of genetics as it applies to problems in medicine. Pediat., *20*: 177-218, 1957.

Chorost, S. B.: Parental child-rearing attitudes and their correlates in adolescent aggression. Unpublished doctoral dissertation. University of Texas, 1960.

Christie, A.: Prevalence and distribution of ossification centers in the newborn infant. Am. J. Dis. Child., *77*:355-361, 1949.

Chukovsky, K.: (Translated from the Russian, and edited by Mariam Merton). From Two to Five. Berkeley, Calif., University of California Press, 1963.

Chun, R. W. M., Pawsat, R., and Forster, F. M.: Sound localization in infancy. J. Nerv. & Ment. Dis., *130*:472-476, 1960.

Church, J.: Language and the Discovery of Reality. New York, Random House, 1961.

Church, R. M.: Effects of punishment on behavior. Psychol. Rev., *70*(5):369-402, 1963.

Ciocco, A., et al.: Child health and selective service physical standards. Pub. Health Rep., *56*:2365-2375, 1941.

Clark, A. M., and Clark, A. D. B.: Mental Deficiency. The Changing Outlook. Chicago, The Free Press of Glencoe, 1958.

Clark, A. W.: Contradictory demands in family relations and adjustment to school and home. Human Relat., *14*:97-111, 1961.

Clark, H. H., and Clark, D. H.: Relationship between level of aspiration and selected factors of boys aged nine years. Res. Quart. AAHPER, *32*:12-19, 1961.

Clark, H. H., and Degutis, E. W.: Comparison of skeletal age and vigorous physical and motor factors with the pubescent development of 10, 13, and 16 year old boys. Res. Quart. AAHPER, *33*:356-368, 1962.

Clark, H. H., and Hayman, N. R.: Reduction of bone assessments necessary for the skeletal age determination of boys. Res. Quart. AAHPER, *33*:202-207, 1962.

Clark, H. H., and Jarman, B. O.: Scholastic achievement of boys nine, twelve, and fifteen years of age as related to various strength and growth measures. Res. Quart. AAHPER, *32*(2):155-162, 1961.

Cleghorn, R. A.: Endocrine Influence on Personality and Behavior. *In* The Biology of Mental Health and Disease. The Twenty-seventh Annual Conference of the Milbank Memorial Fund. New York, Paul B. Hoeber, Inc., 1952.

Clemmons, A. M., and Williams, H.: Motivating adolescents to optimum growth with the Wetzel Grid. J. Home Econ., *44*:192-194, 1954.

Cleugh, M. F.: The Slow Learner. New York. Philosophical Library, Inc., 1957.

Close, K.: Facts and myths about rural youth. Children, *10*(6):233-236, 1963.

Coan, R., and Cattell, R. B.: Reproducible personality factors in middle childhood. J. Clin. Psychol., *14*:339-345, 1958.

Cohen, A. K.: Delinquent Boys: The Culture of the Gang. Chicago, The Free Press of Glencoe, 1955.

Cohen, W., et al.: Size judgment at different distances as a function of age level. Child Development, *29*:473-479, 1958.

Cole, N. J., et al.: A survey assessment of current parental attitudes and practices in child rearing. Am. J. Orthopsychiat., *27*:815-822, 1957.

Coleman, J. C.: Learning methods as a relevant subject variable in learning disorders. Percept. Mot. Skills, *14*:263-269, 1962.

Coleman, J. C., and Hewett, F. M.: Open-door therapy: a new approach to the treatment of underachieving adolescent boys who resist needed psychotherapy. J. Clin. Psychol., *18*:28-33, 1962.

Coleman, J. S.: Academic achievement and the structure of competition. Harvard Educ. Rev., *29*:330-351, 1959.

Coleman, J. S.: The Adolescent Society. Chicago, The Free Press of Glencoe, 1961.

Collier, M. J., and Gaier, E. L.: Adult reactions to preferred childhood stories. Child Development, *29*:97-103, 1958.

Commonwealth of Pennsylvania, Department of Public Instruction, Bureau of Curriculum Development: Pennsylvania's Program of Curriculum Study and Instruction Improvement, 1957-58. Audio-Visual Aids to Instruction.

Cone, T. E.: Secular acceleration of height and biologic maturation in children during the past century. J. Pediat., *59*:736-740, 1961.

Coopersmith, S.: Self-esteem and need achievement as determinants of selective recall and repetition. J. Abnorm. & Social Psychol., *60*:310-317, 1960.

Cornell, E. L., and Armstrong, C. M.: Forms of mental growth patterns revealed by reanalysis of the Harvard growth data. Child Development, *26*:169-204, 1955.

Corner, G. W.: Attaining Manhood: A Doctor Talks to Boys about Sex. Rev. ed. New York, Harper & Bros., 1952,a.

Corner, G. W.: Attaining Womanhood: A Doctor Talks to Girls about Sex. Rev. ed. New York, Harper & Bros., 1952,b.

Corrigan, G. E.: The neonatal scapula. Biol. Neonat., *2*:159-167, 1960.

Cort, R. L.: Clinical observations in newborn premature infants. Arch. Dis. Childhood, *37*:53-62, 1962.

Coursin, D. B.: Effects of vitamin B_6 on the central nervous activity in childhood. Am. J. Clin. Nutrition, *4*:354-362, 1956.

Cowen, E. L., Underberg, R. P., Verrillo, R. T., and Benham, F. G.: Adjustment to Visual Disability in Adolescence. Am. Found. for Blind, 1961.

Cox, F. N., and Leaper, P. M.: General and test anxiety scales for children. Austral. J. Psychol., *11*:70-80, 1959.

Cox, F. N., and Leaper, P. M.: Assessing some aspects of the parent-child relationship. Child Development, *32*:637-649, 1961.

Crandall, V. J., et al.: The development of social compliance in young children. Child Development, *29*:429-443, 1958.

Crandall, V. J., Kalkovsky, W., and Kalkovsky, A.: Motivational and ability determinants of young children's intellectual achievemental behavior. Child Development, *33*:643-661, 1962.

Crandall, V. J., and Preston, A.: Verbally expressed needs and overt maternal behavior. Child Development, *32*:261-270, 1961.

Crandall, V. J., and Rabson, A.: Children's repetition choices in an intellectual achievement situation following success and failure. J. Genet. Psychol., *97*:161-168, 1960.

Crane, A. R.: Symposium: The development of moral

values in children. II: Preadolescent gangs and the moral development of children. Brit. J. Educ. Psychol., *28*:201-208, 1958.

Cronbach, L.J.: Essentials of Psychological Testing. New York, Harper & Bros., 1960.

Crosse, M. V.: The Premature Baby. 5th ed. Boston, Little, Brown and Co., 1961.

Crow, L., and Crow, A. (ed.): Readings in Child and Adolescent Psychology. New York, Longmans, Green, 1961.

Crow, L., and Crow, A. (ed.): Readings in Human Learning. New York, David McKay, Inc., 1963.

Crowell, D. H.: Associations among anatomical and behavior variables of full-term neonates. Child Development., *33*:373-380, 1962.

Cruickshank, W.M.: The effect of physical disability on personal aspiration. The Quart. J. Child Behavior, 3:323-333, 1951.

Cruickshank, W. M.: Psychological considerations with crippled children. *In* Cruickshank, W. M., (ed.): Psychology of Exceptional Children and Youth. 2nd ed. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1963.

Cruickshank, W. M. (ed.): Psychology of Exceptional Children and Youth. 2nd ed. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1963.

Cruickshank, W. M., and Johnson, G. O. (ed.): Education of Exceptional Children and Youth. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1959.

Crutchfield, R. S.: Recent studies in conformity behavior. Paper given at Twelfth Regional Meeting of Veterans Administration Psychologists. San Francisco, Calif. Acad. Sci., Nov. 17, 1955.

Cruze, D. B.: Effects of distraction upon the performance of brain-injured and familial retarded children. Am. J. Ment. Deficiency, *66*:86-92, 1961.

Cruze, W. W.: Adolescent Psychology and Development. New York, The Ronald Press Co., 1953.

Curry, R. L.: The effect of socioeconomic status on the scholastic achievement of sixth-grade children. Brit. J. Educ. Psychol., *32*:46-49, 1962.

Cutts, N. E., and Moseley, N.: Teaching the Bright and Gifted. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1957.

Dameron, L. E.: Development of intelligence of infants with mongolism. Child Development, *34*:733-738, 1963.

Darley, F. L., and Winitz, H.: Age of first word: review of research. J. Speech & Hearing Dis., *26*:272-290, 1961.

Davenport, R. K., and Menzel, E. W., Jr.: Stereotyped behavior of the infant chimpanzee. Am. Arch. Gen. Psychiat., *8*:99-104, 1963.

Davids, A., Holden, R. H., and Gray, G. B.: Maternal anxiety during pregnancy and adequacy of mother and child adjustment eight months following childbirth. Child Development, *34*:993-1002, 1963.

Davids, A., Kidder, C., and Reich, M.: Time orientation in male and female juvenile delinquents. J. Abnorm. & Social Psychol., *64*(3):239-240, 1962.

Davids, A., and Sidman, J.: A pilot study in impulsivity, time orientation, and delayed gratification in future scientists and in underachieving high school students. Except. Child, *29*:170-174, 1962.

Davidson, A., and Fay, J.: Phantasy in Childhood. New York, Philosophical Library, Inc., 1953.

Davidson, K. S., and Sarason, S. B.: Test anxiety and classroom observations. Child Development, *32*:199-210, 1961.

Davies, E. A.: The Elementary School Child and His Posture Patterns. New York, Appleton-Century-Crofts, Inc., 1958.

Davis, C. M.: Feeding after the first year. *In* McQuarrie, I. (ed.): Brennemann's Practice of Pediatrics. Vol. I. Hagerstown, Md., W. F. Prior Co., Inc., 1959.

Davis, J. M.: A reinterpretation of the Barker, Dembo, and Lewin study of frustration and regression. Child Development, *29*:503-506, 1958.

Davitz, J. R.: Contributions of research with children to a theory of maladjustment. Child Development, *29*:3-7, 1958.

Day, R., and Haines, M. S.: Intelligence quotient of children recovered from erythroblastosis fetalis since the introduction of exchange transfusion. Pediat. *13*:333-338, 1954.

de Castro, J.: The Geography of Hunger. Boston, Little, Brown and Co., 1952.

DeHaan, R. F., and Havighurst, R. J.: Educating Gifted Children. Chicago, University of Chicago Press, 1957.

DeHirsch, K., Jansky, J., and Langford, W. S.: The oral language performance of premature children and controls. J. Speech & Hearing Dis., *29*:60-69, 1964.

DeJung, J. E., and Gardner, E. F.: The accuracy of self-role perception: A developmental study. J. Exp. Educ., *31*(1):27-41, 1962.

DeJung, J. E., and Meyer, W. J.: Expected reciprocity: grade trends and correlates. Child Development, *34*:127-139, 1963.

DeLong, A. R.: Toward improved accuracy in test interpretation. Merrill-Palmer Quart., *7*(4):273-285, 1961.

Delsboro, J. D.: Protective casework for abused children. Children, *10*(6):213-218, 1963.

DeLucia, L. A.: The toy preference test: a measure of sex-role identification. Child Development, *34*:107-117, 1963.

Dennis, J. M., and Kaiser, A. D.: Are home accidents in children preventable? Study of 491 cases. Pediat., *13*:568-575, 1954.

Dennis, W.: Causes of retardation among institutional children: Iran, J. Genet. Psychol., *96*:47-59, 1960.

Dennis, W. (ed.): Readings in Child Psychology. 2nd ed. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1963.

Department of Special Services Staff (Champaign, Ill.): Factors associated with underachievement and overachievement in intellectually gifted children. Except. Child, *28*:167-175, 1961.

Desenberg, V. H.: Critical periods for the effects of infantile experience on adult learning. Science, *131*:1227-1228, 1960.

Desmond, M. M., Franklin, R. R., Vallbona, C., Hill, R. M., Plumb, R., Arnold, H., and Watts, J.: The clinical behavior of the newly born. J. Pediat., *62*:307-325, 1963.

Deutch, M.: The Disadvantaged Child and the Learning Process: Some Social, Psychological and Developmental Considerations. New York, Teachers College, Columbia University, 1962.

Deutsch, J. A.: Long term memory as a function of retention time and other conditions of training and recall. Psychol. Rev., *71*(1): Jan., 1964.

Deutsch, J. A.: Our Rejected Children. Boston, Little, Brown and Co., 1950.

Dickson, S.: Differences between children who spontaneously outgrow and children who retain functional articulation errors. J. Speech & Hearing Res., *5*:263-271, 1962.

Dictionary of Occupational Titles, Vol. I, and Occupational Outlook Handbook. Washington, D.C., United States Department of Labor. Published yearly.

Diedrich, W. N., Allender, B., and Byrne, M. C.: The value of a preschool treatment program for severely crippled children. Except. Child., *27*:187-190, 1960.

Dietrich, H. F.: Accidents in childhood. *In* McQuarrie, I. (ed.): Brennemann's Practice of Pediatrics. Vol. I. Hagerstown, Md., W. F. Prior Co., Inc., 1957.

Dietrich, H. F.: The role of education in accident prevention. Pediat., *17*:297-302, 1956.

Dittman, L. L.: The Mentally Retarded Child at Home. Washington, D.C., U.S. Government Printing Office, 1959.

Dodwell, P. C.: Children's understanding of spatial concepts. Canad. J. Psychol., *17*(1):141-161, 1963.

Doehring, D. G.: Visual spatial memory in aphasic children. J. Speech & Hearing Res., *3*:138-149, 1960.

Donaldson, M.: A Study of Children's Thinking. New York, Humanities Press, Inc., 1964.

Douvan, E.: Sex differences in adolescent character processes. Merrill-Palmer Quart., *6*(4):203-211, 1960.

Draguus, J. G., and Multari, G.: Recognition of perceptually ambiguous stimuli in grade school children. Child Development, *32*:541-550, 1961.

Draper, G. (Principal of Samohi High School in Santa Monica, California): An address to parents; Jan. 21, 1964.

Dreizen, S., et al.: The effect of nutritive failure on the growth pattern of white children in Alabama. Child Development, *24*:189-202, 1953.

Dreizen, S., et al.: The effect of prolonged nutritive failure on epiphyseal fusion in the human hand skeleton. Am. J. Roentgenol., Rad. Therapy and Nuclear Med., *78*:461-470, 1957.

Dreizen, S., et al.: The retarding effect of protracted undernutrition on the appearance of the postnatal ossification centers in the hand and wrist. Hum. Biol., *30*:253-264, 1958.

Drews, E. M., and Teahan, J. E.: Parental attitude and academic achievement. J. Clin. Psychol., *13*:328-333, 1957.

Drillien, C. M.: A longitudinal study of the growth and development of prematurely and maturely born children: VI. Physical development in age period 2 to 4 years. Arch. Dis. Childhood, *36*:1-10, 1961.

Drillien, C. M.: The Growth and Development of the Prematurely Born Infant. Baltimore, The Williams & Wilkins Co., Inc., 1964.

Dubin, E. R., and Dubin, R.: The authority inception period in socialization. Child Development, *34*:885-989, 1963.

Dugan, R.: An investigation of the personal, social, educational and economic reasons for success and lack of success in school as expressed by 105 tenth grade biology students. J. Educ. Res., *55*:544-553, 1962.

Dunbar, F.: Emotions and Bodily Changes. 4th ed. New York, Columbia University Press, 1954.

Duncan, G. G.: Diseases of Metabolism. 5th ed. Philadelphia, W. B. Saunders Co., 1964.

Dunn, L. M., and Hottel, J. V.: Peabody Picture Vocabulary Test Performance of trainable retarded children. Am. J. Ment. Deficiency, *65*:448-452, 1961.

Dupertuis, C. W., and Michael, N. B.: Comparison of growth in height and weight between ectomorphic and mesomorphic boys. Child Development, *24*: 203-214, 1953.

Durkin, D.: Children's acceptance of reciprocity as a justice-principle. Child Development, *30*:289-296, 1959,a.

Durkin, D.: Children's conception of justice: A comparison with the Piaget data. Child Development, *30*:59-67, 1959,b.

Durrett, M. E.: The relationship of early infant regulation and later behavior in play interviews. Child Development, *30*:211-216, 1959.

Duvall, E. M.: Family Development. 2nd ed. Philadelphia, J. B. Lippincott Co., 1962.

Easson, W. M., and Steinhilber, R. M.: Murderous aggression by children and adolescents. Am. Arch. Gen. Psychiat., *4*:1-9, 1961.

Eaton, M. T., et al.: Problem behavior in school. J. Educ. Psychol., *47*:350-357, 1956.

Educational Television: The Next Ten Years. A Report and Summary of Major Studies on the Problems and Potential of Educational Television. Stanford, Calif., The Institute for Communication Research, 1962.

Educators' Guide to Free Films. 18th ed. Randolph, Wis., Educators' Progress Service, 1964.

Educators' Guide to Free Slidefilms. 10th ed. Randolph, Wis., Educators' Progress Service, 1964.

Edwards, A. L.: Edwards' Personal Preference Schedule, Manual. New York, The Psychological Corp., 1954.

Eissler, R., et al. (ed.): The Psychoanalytic Study of the Child. Vol. XII. New York, International Universities Press, 1962.

Elder, G. H., Jr.: Structural variations in the child rearing relationship. Sociometry, *25*:241-262, 1962.

Eliott, M. M.: Deaths around birth—the national score. J.A.M.A. *167*:945-949, 1958.

Elkind, D.: Quantity conceptions in junior and senior high school students. Child Development, *32*:551-560, 1961,a.

Elkind, D.: Children's discovery of the conservation of mass, weight and volume: Piaget replication study. J. Genet. Psychol., *98*:219-227, 1961,b.

Elkind, D., and Scott, L.: Studies in perceptual development. I. The decentering of perception. Child Development, *33*:619-630, 1962.

Ellingson, R. J.: Cortical electrical responses to visual stimulation in the human infant: E.E.G. Clin. Neurophysiol., *12*:663-667, 1960.

Ellis, R. W. B.: Growth and health of Belgian children during and after the German occupation, 1940-1944. Arch. Dis. Childhood *20*:97-109, 1945.

Elmer, E.: Abused young children seen in hospitals. Social Work, October, 1960.

Elmer, E. Identification of abused children. Children, *10*(5):180-184, 1963.

Emmerick, W.: Parental identification in young children. Genet. Psychol. Monogr., *LX*:257-308, 1959,a.

Emmerick, W.: Young children's discriminations of parent and child roles. Child Development, *30*: 403-419, 1959,b.

Emmerick, W.: Family role concepts of children ages six to ten. Child Development, *32*:609-624, 1961.

Emmerick, W.: Variations in the parent role as a function of the parent's sex and the child's sex and age. Merrill-Palmer Quart., *8*:3-11, 1962.

Eng, H.: The Psychology of Child and Youth Drawing. New York, Humanities Press, Inc., 1957.

Engel, G. L.: Psychological Development in Health and Disease. Philadelphia, W. B. Saunders Co., 1962.

Engelmann, W.: [Maturational changes in the area of

emotionally based values in today's youth.] Psychol. Rdsch., *13*:131-140, 1962.
English, H. B.: Dynamics of Child Development. New York, Holt, Rinehart & Winston, Inc., 1962.
Epstein, R.: Social class membership and early childhood memories. Child Development, *34*:503-508, 1963.
Epstein, R., and Severant, S.: Verbal conditioning and sex-role identification in children. Child Development, *34*:99-106, 1963.
Erickson, M. T.: Effects of social deprivation and satiation on verbal conditioning in children. J. Comp. & Physiol. Psychol., *55*:953-957, 1962.
Erickson, M. T., and Lipsitt, L. P.: Effects of delayed rewards on simultaneous and successive discrimination learning in children. J. Comp. & Physiol. Psychol., *53*:256-260, 1960.
Erikson, E. H.: Childhood and Society. New York, W. W. Norton & Co., Inc., 1950.
Erikson, E. H.: Play Interviews for Four-Year-Old Hospitalized Children. Monogr. Soc. Res. Child Development, *23*(3). Lafayette, Ind., Child Development Publications, 1958.
Erikson, E. H.: Youth: fidelity and diversity. Daedalus, Winter, 1962.
Eron, L. D., Banta, T. J., Walder, L. O., and Laulicht, J. H.: Comparison of data obtained from mothers and fathers on childrearing practices and their relations to child aggression. Child Development, *32*: 457-472, 1961.
Eron, L. D., Walder, L. O., Toigo, R., and Lefkowitz, M. M.: Social class, parental punishment for aggression and child aggression. Child Development, *34*:849-867, 1963.
Erwin, S. M., and Foster, G.: The development of meaning in children's descriptive terms. J. Abnorm. & Social Psychol., *61*:271-275, 1960.
Escalona, S.: Children and the Threat of Nuclear War. Child Study Assn. Amer., 1962.
Escalona, S., and Heider, G. M.: Prediction and Outcome. New York, Basic Books, Inc., 1959.
Escalona, S., and Moriarty, A.: Prediction of school-age intelligence from infant tests. Child Development, *32*:597-605, 1961.
Espenschade, A.: The meaning of exercise. Child Study, Spring, 1956.
Espenschade, A. S., and Meleny, H. E.: Motor performances of adolescent boys and girls of today in comparison with those of 24 years ago. Res. Quart. AAHPER, *32*:186-189, 1961.
Espenschade, A.: Motor development. *In* Johnson, W. R. (ed.): Science and Medicine of Exercise and Sports. 1960, pp. 419-439.
Estes, B. W.: Judgment of size in relation to geometric shape. Child Development, *32*(2): 275-286, 1961.
Estvan, F. J.: Studies in social perception: methodology. J. Genet. Psychol., *92*:215-246, 1958.
Eysenck, H. J.: The development of moral values in children: The contribution of learning theory. Brit. J. Educ. Psychol., *XXX*:11-22, 1960.
Eysenck, H. J.: Symposium: Development of Moral Values in Children, VII. The Contribution of Learning Theory. Brit. J. Educ. Psychol., *30*: Pt. 1, 11-21, 1960.
Faegre, M. L., Anderson, J. E., and Harris, D. B.: Child Care and Training. 8th ed. Minneapolis, University of Minnesota Press, 1958.
Fahs, S. L.: Today's Children and Yesterday's Heritage: A Philosophy of Creative Religious Experience. Boston, Beacon Press, Inc., 1954.
Falk, G. J.: The role of social class differences and horizontal mobility in the etiology of aggression. J. Educ. Sociology, 1959.
Falkner, F.: Decidious tooth eruption. Arch. Dis. Childhood, *31*:386-391, 1957.
Falkner, F., et al.: Some international comparisons of physical growth in the first five years of life. Courrier-C.I.E., *8*:1-11, 1958.
Fantz, R. L.: Pattern vision in newborn infants. Science, *140*:296-297, 1963.
Farber, B.: Effects of a Severely Mentally Retarded Child on Family Integration. Monogr. Soc. Res. Child Development, *24*(2). Lafayette, Ind., Child Development Publications, 1959.
Farber, B.: Family organization and crisis: maintenance of integration in families with a severely retarded child. Monogr. Soc. Res. Child Development, *25*(1), 1960.
Fawl, C.: A developmental analysis of the frequency and causal types of disturbance experienced by children. Merrill-Palmer Quart., *8*:13-18, 1962.
Feinberg, H., and Moscovitch, E.: Achievement on the Stanford Achievement Test of children in difficult own home situations compared with children placed out of the home. J. Exper. Educ., *26*:67-80, 1957.
Feldhausen, J. F., and Klansmeier, H. J.: Anxiety, intelligence, and achievement in children of low, average, and high intelligence. Child Development, *33*(2):403-409, 1962.
Ferber, B., and Brightman, I. J.: An interdepartmental approach to mental retardation: use of data from diagnostic clinics for program planning. Am. J. Pub. Health, *50*:1570-1581, 1960.
Ferster, C. B.: Positive reinforcement and behavioral deficits of autistic children. Child Development, *32*:437-456, 1961.
Fey, W. F.: Correlates of certain subjective attitudes toward the self and others. J. Clin. Psychol., *13*:44-49, 1957.
Finn, S. B.: Prevalence of dental caries. *In* A Survey of the Literature of Dental Caries. Food and Nutrition Board, National Research Council Publ. No. 225. Washington, D.C., National Academy of Sciences-National Research Council, 1952.
Fischer, L. K.: The significance of a typical postural and grasping behavior during the first year of life. Am. J. Orthopsychiat., *28*:368-375, 1958.
Fishman, R., and Tallarico, R. B.: Studies of visual depth perception: II. Avoidance reaction as an indicator in chicks. Percept. Mot. Skills, *12*:251-257, 1961.
Flavell, J. H.: The Developmental Psychology of Jean Piaget. Princeton, N.J., D. Van Nostrand, Inc., 1963,a.
Flavell, J. H.: Piaget's contributions to the study of cognitive development. Merrill-Palmer Quart., *9*(4): 245-252, 1963,b.
Fluhmann, C. F.: The Management of Menstrual Disorders. Philadelphia, W. B. Saunders Co., 1956.
Ford, C. E.: Chromosomal abnormality and congenital Malformations. *In* Ciba Foundation Symposium on Congenital Malformations. Jan. 19-21, 1960.
Ford, C. S., and Beach, F. A.: Patterns of Sexual Behavior. New York, Paul B. Hoeber, Inc., 1951.
Forsham, P. H., and Thorn, G. W.: The adrenals. *In* Williams, R. H. (ed.): Textbook of Endocrinology. 2nd ed. Philadelphia, W. B. Saunders Co., 1955.
Fosdick, L. S.: The reduction of the incidence of dental caries. I. Immediate brushing with a neutral dentifrice. J. Am. Dent. A., *40*:133-143, 1950.

Foss, B. M. (ed.): Determinants of Infant Behavior. New York, John Wiley & Sons, Inc., 1962.
Foss, B. M. (ed.): Determinants of Infant Behavior. Vol. II. New York, John Wiley & Sons, Inc., 1964.
Fowler, W.: Cognitive learning in infancy and early childhood. Psychol. Bull., *59*:116-152, 1962.
Fox, C. D., et al.: Human figure drawings of high and low anxious children. Child Development, *29*:297-301, 1958.
Francis, C. C.: The Human Pelvis. St. Louis, The C. V. Mosby Co., 1952.
Frantz, R. L.: Pattern vision in young infants. Psychol. Rev., *8*:43-47, 1958.
Frantz, R. L.: The origin of form perception. Scient. Am., *204*:66-72, 1961.
Franus, E.: [More on infants' fear reactions at the sight and sound of an unknown and masked person.] Psychol. wych., *5*(4):392-401, 1962.
Fraser, F. C.: Recent advances in genetics in pediatrics. J. Pediat., *52*:734-757, 1958.
Fraser, F. C., et al.: Experimental production of congenital cleft palate: genetic and environmental factors. Pediat., *19*:782-871, 1957.
Freed, E. X., and Cruickshank, W. M.: The relation of cardiac disease to feelings of fear. J. Pediat., *43*:483-488, 1953.
Freedman, D. G.: The infant's fear of strangers and the flight response. J. Child Psychol. Psychiat., *2*:242-248, 1961.
Freedman, D. G., and Keller, B.: Inheritance of behavior in infants. Science, *140*:196-198, 1963.
Freedman, R., Whelpton, P. K., and Campbell, A. A.: Family Planning, Sterility, and Population Growth. New York, McGraw Hill Book Co., Inc., 1959.
Freides, D., Fredenthal, B. J., and Cohen, B. D.: Changes in two dimensions of cognition during adolescence. Child Development, *34*:1047-1055, 1963.
French, J. R. P., Jr.: A formal theory of social power. Psychol. Rev., *63*:181-194, 1956.
Frenkel-Brunswik, E., and Havel, J.: Prejudice in the interviews of children. I. Attitudes toward minority groups. J. Genet. Psychol., *82*:91-136, 1953.
Freud, A. and Burlingham, D.: War and Children. New York, Med. War Books, 1943.
Freud, A.: Psychoanalysis for Parents and Teachers. (trs. by Barbara Lowe). Boston, Beacon Press, 1960.
Freud, A.: The Ego and the Mechanisms of Defense. New York, International Universities Press, 1946.
Freud, A.: The role of bodily illness in the mental life of children. *In* Eissler, R. S., et al. (ed.): The Psychoanalytic Study of the Child. Vol. VII. New York, International Universities Press, 1952.
Fried, R. K., and Smith, E. E.: Postmenarcheal growth patterns. J. Pediat., *61*:562-565, 1962.
Friedgood, H. B.: Neuroendocrinology. *In* Williams, R. H. (ed.): Textbook of Endocrinology. 2nd ed. Philadelphia, W. B. Saunders Co., 1955.
Fromm, E.: The Art of Loving. New York, Harper & Bros., 1956.
Fromm, E., Hatman, L. D., and Marschak, M.: Children's intelligence tests as a measure of dynamic personality functioning. Am. J. Orthopsychiatry, *27*(1):134-144, 1957.
Fry, P. C.: Diets of post-adolescent young women. J. Am. Dietet. A., *35*:687-691, 1959.
Funkenstein, D. H.: The physiology of fear and anger. Scient. Am., May, 1955.
Furth, H. G.: The influence of language on the development of concept formation in deaf children. J. Abnorm. & Social Psychol., *63*:386-389. 1961.
Furth, H. G.: Visual paired-associates task with deaf and hearing children. J. Speech & Hearing Res., *4*:172-177, 1961.
Furth, H. G.: Research with the deaf: implications for language and cognition. Psychol. Bull., *62*(3):145-164, 1964.

Gaier, E. L., and Collier, M. J.: The latency-stage story preferences of American and Finnish children. Child Development, *31*(3):431-452, 1960.
Galdston, I. (ed.): Beyond the Germ Theory. New York, Health Education Council, New York Academy of Medicine, 1954.
Galdston, I. (ed.): The Family in Contemporary Society. The Eastern States Health Education Conference. New York, International Universities Press, Inc., 1958.
Gallagher, J. J., and Crowder, T.: The adjustment of gifted children in the regular classroom. Except. Child, *23*:306-319, 1957.
Gallagher, U. M.: What of the unmarried parent? J. Home Economics, *55*(6):403-405, 1963.
Garcia, J., and Buchwald, N. A.: Note on Furchtgott's "Behavioral Effects of Ionizing Radiations: 1955-1961." Psychol. Bull., *61*(3):234-235, 1964.
Gardner, D. B., Hawkes, G. R., and Burchinal, L. G.: Noncontinuous mothering in infancy and development in later childhood. Child Development, *32*(2):225-239, 1961.
Gardner, L. I.: Isosexual precocity in boys and girls. Pediat. Clin. North America. Philadelphia, W. B. Saunders Co., November, 1957.
Gardner, R. W.: Discussion of Kagan, Moss and Sigel: 1963 article on psychological significance of styles of conceptualization. *In* Wright, J. C., and Kagan, J. (ed.): Basic Cognitive Processes in Children. Monog. Soc. Res. Child Development, Serial No. 86, *28*(2):112-124, 1963.
Gardner, R. W., Holzman, P. S., Klein, G. S., Lucton, H. B., and Spence, D. P.: Cognitive control: a study of individual consistencies of cognitive behavior. Psychol. Issues, *1*, No. 4., 1959.
Garn, S. M.: Individual and group deviations from "channel wise" grid progression in girls. Child Development, *23*:193-206, 1952.
Garn, S. M., and Shamir, Z.: Methods for Research in Human Growth. Springfield, Ill., Charles C Thomas, 1958.
Garn, S. M., and Young, R. W.: Concurrent fat loss and fat gain. Am. J. Phys. Anthropol. *14*:497-504, 1956.
Garn, S. M., et al.: The sex difference in tooth calcification. J. Dent. Res., *37*:561-567, 1958.
Garn, S. M., et al.: Variability of tooth formation in man. Science, *128*:1510, 1958.
Garn, S. M., Clark, A., Landkof, L., and Newell, L.: Parental body build and developmental progress in the offspring. Science, *132*:1555-1556, 1960.
Garn, S. M., et al: Sibling similarities in dental development. J. Dent. Res., *39*:170-175, 1960.
Garre, W. J.: Basic Anxiety. New York, Philosophical Library, 1962.
Geber, M.: [Problems posed by the development of the young African child as a function of his social environment.] Travail Hum., *23*:97-111, 1960.
Geber, M., and Dean, R. F. A.: The psychological changes accompanying Kwashiorkor. Courrier *vi*:3-15, 1956.
Gellert, E.: Systematic observation: a method in child study. Harvard Educ. Rev., *25*:179-195, 1955.
Gellert, E.: Reduction in emotional stresses of hospitalization for children. Am. J. Occup. Ther., *7*:3, 1958.

Gerard, D. L., and Phillips, L.: Relation of social attainment to psychological and adrenocortical reactions to stress. Arch. Neurol. & Psychiat., *69*:352-354, 1953.

Gerard, R. W. (ed.): Food for Life. Chicago, University of Chicago Press, 1952.

Gershensen, S., and Schreiber, M.: Mentally retarded teenagers in a social group. Children, May-June, 1963.

Gerver, J. M., and Day, R.: Intelligence quotient of children who have recovered from erythroblastosis fetalis. J. Pediat., *36*:342-345, 1950.

Gesell, A. L.: Infant Development: The Embryology of Early Human Behavior, New York, Harper & Bros., 1952.

Getz, S. B., and Rees, E. L.: The Mentally Ill Child. Springfield, Ill., Charles C Thomas, 1957.

Getzels, J. W., and Jackson, P. W.: Family environment and cognitive style: a study of the sources of highly intelligent and of highly creative adolescents. Am. Sociol. Rev., *26*:351-359, 1961, a.

Getzels, J. W., and Jackson, P. W.: Creativity and Intelligence. New York, John Wiley & Sons, Inc., 1961, b.

Getzels, J. W., and Jackson, P. W.: Creativity and Intelligence: Explorations with Gifted Students. New York, John Wiley & Sons, Inc., 1962.

Gerwirtz, J. L.: A learning analysis of the effects of normal stimulation, privation and deprivation on the acquisition of social motivation and attachment. *In* Foss, B. M. (ed.): Determinants of Infant Behavior, Proceedings of a Tavistock study group on mother-infant interaction. London, Methuen & Co., Ltd., 1961.

Ghent, L.: Developmental changes in tactual thresholds on dominant and nondominant sides. J. Comp. & Physiol. Psychol., *54*:670-673, 1961.

Ghesquiere-Dierickx, B.: [How children draw: evolution of drawings with age.] Enfance, No. 2, 179-183, 1961.

Gibbs, E.: The Teaching of Art in Schools. Rev. ed. New York, John De Graff, Inc., 1958.

Gibson, E. J.: Improvement in perceptual judgments as a function of controlled practice or training. Psychol. Bull., *50*:401-431, 1953.

Gibson, E. J.: Perceptual learning: differentiation or enrichment: Psychol. Rev., *62*:32-41, 1955.

Gibson, E. J., Gibson, J. J., Pick, A. D., and Osser, H.: A developmental study of the discrimination of letter-like forms. J. Comp. & Physiol. Psychol., 55:897-906, 1961.

Gibson, E. J., and Olum, V.: Experimental methods of studying perception in children. *In* Mussen, P. (ed.): Handbook of Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960, Chapter 8.

Gilbert, E.: Children's concepts of the content and functions of the human body. Genet. Psychol. Monogr., *65*:293-405, 1962.

Gilbert: E.: Quoted in Los Angeles Times, March 24, 1964.

Gilchrist, E. P.: The extent to which praise and reproof affect a pupil's work. School & Soc., *4*:872-874, 1961.

Gillespie, R. D.: Psychological Effects of War on Citizen and Soldier. New York, W. W. Norton & Co., Inc., 1942.

Ginzberg, E.: The changing pattern of women's work: Some psychological correlates. Am. J. Orthopsychiat., *28*:313-321, 1958.

Ginzberg, E. (ed.): Values and Ideals of American Youth. New York, Columbia University Press, 1961.

Glass, B.: The hazards of atomic radiation to man. British and American reports. J. Hered., *47*:260-268, 1956.

Glassow, R. B., and Kruse, P.: Motor performance of girls age 6 to 14 years. Res. Quart. AAHPER, *31*:426-433, 1960.

Glickman, E.: Child Placement Through Clinically Oriented Casework. New York, Columbia University Press, 1957.

Glueck, S., and Glueck, E.: Physique and Delinquency. New York, Harper & Bros., 1956.

Glueck, S., and Glueck, E.: Working mothers and delinquency. Ment. Hyg., *41*:327-352, 1957.

Goggin, R. L.: Modern Mathematics for Parents. Riverside, Calif., Munson Business Service, 1963.

Gofman, H., et al.: The child's emotional response to hospitalization. Am. J. Dis. Child., *93*:157-164, 1957.

Gogel, W. C.: Size cue to verbally perceived distance. Psychol. Bull., 62(4):217-235, 1964.

Goldfarb, W.: Psychological privation in infancy and subsequent adjustment. Am. J. Orthopsychiat., *15*:247-255, 1945.

Goode, W. J.: Family disorganization. *In* Merton, R. K., and Nesbit, R. A. (ed.): Contemporary Social Problems. New York, Harcourt, Brace & World, Inc., 1961.

Goodenough, F. L., and Maurer, K. M.: The Mental Growth of Children from Two to Fourteen Years. A Study of the Predictive Value of the Minnesota Preschool Scale. Minneapolis, University of Minnesota Press, 1942.

Goodenough, F. L., and Tyler, L. E.: Developmental Psychology: An Introduction to the Study of Human Behavior. 3rd ed. New York, Appleton-Century-Crofts, Inc., 1959.

Goodlad, J. I.: Some effects of promotion and non-promotion upon the social and personal adjustment of children. J. Exper. Educ., *22*:301-328, 1954.

Goodman, M. E.: Race Awareness in Young Children. Reading, Mass., Addison-Wesley Publishing Co., Inc., 1952.

Goodstein, L. D.: Intellectual impairment in children with cleft palates. J. Speech & Hearing Res., *4*:287-294, 1961.

Gopalan: Reported in Kwashiorkor in Uganda and Coonoor. Nutrition Reviews, *14*:263-266, 1956.

Gordon, H. H.: A summary of some clinical aspects of obesity. *In* Gordon, H. H., mod.: Obesity (A panel discussion.) Am. Acad. Pediat. Pediat., *20*:556-564, 1957.

Goslin, D. A.: Accuracy of self perception and social acceptance. Sociometry, *25*:283-296, 1962.

Gottesman, I. I.: Heritability of personality: a demonstration. Psychol. Monogr.: General & Applied, *77*(a), whole issue, 1963.

Gough, H. G.: Techniques for identifying the creative research scientist. *In* Institute of Personality Assessment and Research. The Creative Person. Berkeley, University of California and University Extension. Liberal Arts Dept., *228*: pp. III-I-III, 27, 1961.

Gould, H. N., and Gould, M. R.: Age of first menstruation in mothers and daughters. J.A.M.A., *98*:1349-1352, 1932.

Graham, E. E.: The real bases of reading difficulties. A letter. School & Soc., March 29, 1958.

Graham, F. K., and Berman, P. W.: Development in preschool children of the ability to copy forms. Child Development, *31*:339-359, 1960.

Harper, R. J. C., et al.: The Cognitive Processes: Readings. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1964.
Harrell, L. E.: A comparison of the development of oral and written language in school-age children. Monog. Soc. Res. Child Development, Serial No. 66, *22*(3), 1957.
Harris, D. B. (ed.): The Concept of Development. Minneapolis, University of Minnesota Press, 1957.
Harris, D. B.: Parental judgment of responsibility in children, and children's adjustment. J. Genet. Psychol., *92*:161-166, 1958.
Harrison, V. F.: Review of the neuromuscular bases for motor learning. Res. Quart. AAHPER, *33*:59-69, 1962.
Harsh, C M., and Schrickel, H. G.: Personality Deverlopment and Assessment. Rev. ed. New York, The Ronald Press Co., 1959.
Hartley, R. E.: Children's concepts of male and female roles. Merrill-Palmer Quart., *6*:83-91, 1960.
Hartley, R. E.: A developmental view of female sex-role definition and identification. Merrill-Palmer Quart., *10*(1):3-16, 1964.
Hartley, R. E., and Goldenson, R. M.: The Complete Book of Children's Play. New York, Thomas Y. Crowell Co., 1957.
Hartley, R. E., and Hardesty, F.: Children's perceptions of sex-roles in childhood. J. Genet. Psychol. In press (1964).
Hartley, R. E., and Hartley, E. L.: Outside Readings in Psychology. New York, Thomas Y. Crowell Co., 1957.
Hartup, W. W.: Nurturance and nurturance withdrawal in relation to the dependency behavior of preschool children. Child Development, 29:191-201, 1958.
Hartup, W. W.: Some correlates of parental imitation in young children. Child Development, *33*(1):85-96, 1962.
Hartup, W. W., and Keller, E. D.: Nurturance in preschool children and its relationship to dependency. Child Development, *31*:681-689, 1960.
Hartup, W. W., and Zook, E. A.: Sex-role preferences in three- and four-year-old children. J. Consult Psychol., *24*:420-426, 1960.
Harwood, E. E.: Social development in the Queensland adolescent. Austral. J. Educ., *3*:77-87, 1959.
Havighurst, R. J.: Human Development and Education. New York, Longmans, Green & Co., Inc., 1953.
Havighurst, R. J.: Education for the Gifted. The 57th Yearbook of the National Society for the Study of Education. Part II. Chicago, University of Chicago Press, 1958.
Havighurst, R. J., Bowman, P. H., Liddle, G. P., Mathews, C. V., and Pierce, J. V.: Growing Up in River City. New York, John Wiley & Sons, Inc., 1962.
Hawkes, G. R., et al: Pre-adolescents' views of some of their relations with their parents. Child Development, *28*:393-399, 1957.
Hawkes, G. R., and Pease, D.: Behavior and Development from Five to Twelve. New York, Harper & Bros., 1962.
Haworth, M.: Responses of children to a group projective film and to the Rorshach, CAT, Despert Fables and D-A-P. J. Proj. Tech., *26*:47-60, 1962.
Hayes, S. P.: First Regional Conference on Mental Measurements of the Blind. Watertown, Mass., Perkins Institution, 1952.
Hayes, S. P.: Measuring the intelligence of the blind. *In* Zahl, P. A. (ed.): Blindness. Princeton, N.J., Princeton University Press, 1950.
Head, S. W.: Broadcasting in America. Boston, Houghton Mifflin Co., 1956.
Healy, W., and Bronner, A.: Delinquency as a mode of adjustment. *In* Kuhlen, R. G., and Thompson, G. T.: Psychological Studies in Human Development. New York, Appleton-Century-Crofts, Inc., 1952.
Hebb, D. O.: The Organization of Behavior. New York, John Wiley & Sons, Inc., 1949.
Heinstein, M.: Behavioral correlates of breast-bottle regimes under varying parent infant relationships. Monogr. Soc. Res. Child Development, Serial No. 88, *28*(4), 1963.
Held, V. P.: What can we do about "J.D."? The Reporter, August, 1959.
Henderson, J. L. (ed.): Cerebral Palsy in Childhood and Adolescence. Baltimore, The Williams & Wilkins Co. 1961.
Henry, F. M.: Stimulus complexity, movement complexity, ages and sex in relation to reaction latency and speed in limb movements. Res. Quart. AAHPER, *32*:353-366, 1961.
Henry, G. W.: All the Sexes. A Study of Masculinity and Femininity. New York, Rinehart, 1955.
Henry, G. W.: Freud's pathography and psychoanalysis. Ann. New York Acad. Sc., *96*(3): 823-830, 1962.
Hess, R. D., and Goldman, H.: Parents' views of the effects of television on their children. Child Development, *33*:411-426, 1962.
Hess, R. D., and Torney, J. V.: Religion, age and sex in children's perceptions of family authority. Child Development, *33*:781-789, 1962.
Hewitt, D.: Some familial correlations in height, weight and skeletal maturity. Ann. Hum. Genet., *22*:26-35, 1957.
Hewitt, D., et al.: Oxford Child Health Survey. Effect of childish ailments on skeletal development. Brit. J. Prev. Soc. Med. *9*:179-186, 1955.
Hickey, K.: Reading ability of cerebral palsied children. Development Med. Child Neurol., *4*:209-210, 1962.
Hildreth, G. H.: Development and training of hand dominance: Developmental problems associated with handedness: Training of handedness. J. Genet. Psychol., *76*:39-144, 1950.
Hilgard, E. R.: Introduction to Psychology. 3rd ed. New York, Harcourt, Brace & World, 1962.
Hilkevitch, R. R.: Social intercourse processes: a quantitive study. Psychol. Rep., *7*:195-201, 1960.
Hill, I. N., et al.: Evanston dental caries study XVII. Dental caries experience rates associated with boys and girls, white and Negro children. J. Am. Dent. A., *55*:473-482, 1957.
Hill, I. N., et al.: Evanston dental caries study XVIII. Report on the permanent teeth dental caries experience rate of the children in the control area (Oak Park, Ill.). J. Am. Dent. A., *56*:688-691, 1958.
Hill, L. F.: Obesity in pediatric practice. *In* Gordon, H. H., mod.: Obesity (A panel discussion.) Am. Acad. Pediat. Pediat., *20*:540-546, 1957.
Hill, W. F.: Learning theory and the acquisition of values. Psychol. Rev., *77*:317-332, 1960.
Hillson, J. S., and Worchel, P.: Self concept and defensive behavior in the maladjusted. J. Consult. Psychol., *21*:83-88, 1957.
Hindley, C. B.: The Griffiths Scale of Infant Develop-

ment: scores and predictions from 3 to 18 months. J. Child Psychol. & Psychiat., *1*:99-112, 1960.

Hinton, M., Chadderdon, H., Eppright, E., and Wolins, L.: Influences on girls eating behavior. J. Home Econ., *54*:842-846, 1962.

Hirt, M. (ed.): Rorschach Science: Readings in Theory and Method. Chicago, The Free Press of Glencoe, 1962.

Hirvensalo, M., and Kinnunen, O.: Effect of Asian influenza on fetal development. Ann. paediat. Fenniae, *8*:256-268, 1962.

Hixon, T. J., and Hardy, J. C.: Restricted motility of the speech articulators in cerebral palsy. J. Speech & Hearing Dis., *29*:293-306, 1964.

Hoffman, L. W.: The father's role in the family and the child's peer-group adjustment. Merrill-Palmer Quart., 7(2): 97-105, 1961.

Hoffman, L. W., and Wyatt, F.: Social change and motivations for having larger families: some theoretical considerations. Merrill-Palmer Quart., *6*(4): 235-244, 1960.

Hoffman, M. L.: Power assertion by the parent and its impact on the child. Child Development, *31*:129-143, 1960.

Hoffman, M. L.: Childrearing practices and moral development: generalizations from empirical research. Child Development, *34*:295-318, 1963,a.

Hoffman, M. L.: Parent discipline and the child's consideration for others. Child Development, *34*:573-588, 1963,b.

Hoffman, M. L., and Hoffman, L. W. (ed.): Review of Child Development Research. Vol. I. Soc. Res. Child Development, New York, Russell Sage Foundation, 1964.

Hoffman, M. L., and Saltzstein, H. D.: Parent practices and the child's moral orientation. Paper read at Am. Psychol. Assn., Chicago, Sept., 1960.

Hofstaetter, P. R.: The changing concepts of "intelligence"—a study in T-technique. J. Genet. Psychol., *85*:159-163, 1954.

Holden, R. H., and Solomons, G.: Relations between pediatric, psychological, and neurological examinations during the first year of life. Child Development, *33*:719-727, 1962.

Hollenberg, E., and Sperry, M.: Some antecedents of aggression and effects of frustration in doll play. Personality, *1*:32-43, 1951.

Hollingshead, A. B., and Redlich, F. C.: Social Class and Mental Illness. New York, John Wiley & Sons, Inc., 1958.

Holloway, H. D.: Normative data on the children's manifest anxiety scale at the rural third grade level. Child Development, *32*:129-134, 1961.

Holmes, J. A.: Personality of the disabled reader. J. Developmental Reading., *4*:111-122, 1961.

Holowinsky, I.: I.Q. constancy in a group of institutionalized mental defectives over a period of three decades. Training Sch. Bull., *59*:15-17, 1962.

Holt, K. S.: The home care of severely retarded children. Pediat., *22*:746-755, 1958.

Holt, K. S.: Motor development: posturally induced variations. J. Pediat., *57*:571-575, 1960.

Holt, L. E., Jr.: Amino Acid Deficiencies in Man. Implications of Nutrition and Public Health in the Postwar Period. Proc. of Conference, Children's Fund of Michigan. Detroit, 1944.

Honigmann, J. J.: Culture and Personality. New York, Harper & Bros., 1954.

Honzik, M. P.: Developmental studies of parent-child resemblance in intelligence. Child Development, *28*:215-228, 1957.

Horkheimer, M. F., and Diffor, J. W.: Educators' Guide to Free Films. Randolph, Wis., Educators' Progress Service, 1964.

Horney, K.: Neurosis and Human Growth. New York, W. W. Norton & Co., Inc., 1950.

Horney, K.: [Culture and aggression: Some considerations and objections to Freud's theory of instinctual drives toward death and destruction.] (Trans. by B. S. Van Bark) Am. J. Psychoanal., *20*:130-138, 1960.

Horowitz, F. D.: The relationship of anxiety, self-concept, and sociometric status among fourth, fifth, and sixth grade children. J. Abnorm. & Social Psychol., *65*:212-214, 1962.

Horrocks, J. R.: The Psychology of Adolescence: Behavior and Development. Boston, Houghton Mifflin Co., 1951.

House, R. W.: A summary of 49 radiologists' opinions on the skeletal age limits of apparently normal 6-year-old children. Am. J. Roentgenol., *64*:442-445, 1950.

Howard, P. J., and Worrell, C. H.: Premature infants in later life: Study of intelligence and personality of 22 premature infants at ages 8 to 19 years. Pediat., *9*:577-584, 1952.

Howe, E. E.: Effect of vitamin B_{12} on growth-retarded children: A review. Am. J. Clin. Nutrition, *6*:18-25, 1958.

Howell, C. L., and Muhler, J. C.: Effect of topically applied stannous chlorofluoride on the dental caries experience in children. II. Results two years after initial treatment. J. Am. Dent. A., *55*:493-495, 1957.

Hubble, D.: The problems of puberty. Brit. Med. J., *1*:191-193, 1958.

Hubble, D., and Macmillan, D. R.: A study of growth promotion in children. Arch. Dis. Childhood, *37*: 518-524, 1962.

Hubert, M. A. G., and Britton, J. H.: Attitudes and practices of mothers rearing their children from birth to the age of two years. J. Home Econ., *49*:208-223, 1957.

Huggett, A. J., and Millard, C. V.: Growth and Learning in the Elementary School. Boston, D. C. Heath & Co., 1946.

Hughes, R. B.: Verbal conceptualization in deaf and hearing children. Except. Child, *27*:510, 517-522, 1961.

Hunt, J. McV.: Experience and the development of motivation: Some reinterpretations. Child Development, *31*:489-504, 1960.

Hunt, J. McV.: Intelligence and Experience. New York, The Ronald Press Company, 1961.

Hunt, J. McV.: Piaget's observations as a source of hypothesis concerning motivation. Merrill-Palmer Quart., *9*(4): 263-275, 1963.

Hunt, L. A.: A Developmental Study of Factors Related to Children's Clothing Preferences. Monogr. *24*(1). Lafayette, Ind., Society for Research in Child Development, 1959.

Huntingford, P. J.: Attitude of doctors and midwives to breast feeding. Development Med. Child Neurol., *4*:588-594, 1962.

Hurley, J. R.: Parental acceptance-rejection and children's intelligence. Merrill-Palmer Quart., *11*(1): 19-32, 1965.

Hurlock, E. B.: Child Development. 3rd ed. New York, McGraw-Hill Book Co., Inc. 1955.

Hurlock, E. B.: Developmental Psychology. 2nd ed. New York, McGraw-Hill Book Co., Inc., 1959.

Hutchinson, R. C.: Meal habits and their effects on performance. Nutrition Abst. & Rev., *22*:283-297, 1952.

Hutt, M. L., and Gibby, R. G.: The Mentally Retarded Child. Boston, Allyn & Bacon, Inc., 1958.

Hutt, M. L., and Gibby, R. G.: The Child: Development and Adjustment. Boston, Allyn & Bacon, Inc., 1959.

Hyde, H. van Z.: World Health Organization-Progress of Plans. Dept. of State Bull. 3126. Washington, D.C., April 4, 1948.

Hymes, J. L.: The Child Under Six. Englewood Cliffs, N.J., Prentice-Hall, Inc. 1963.

Illingworth, R. S.: An Introduction to Developmental Assessment in the First Year. London, England, National Spastics Society, 1962.

Illingworth, R. S., and Woods, Grace, E.: The incidence of twins in cerebral palsy and mental retardation. Arch. Dis. Childhood, 35:333-335, 1960.

Imedadze, N.V.: On the psychological nature of bilingualism. Vop. Psikhol., No. 1, 60-68, 1960.

Imielinski, K.: A comparative study of sex information of adolescents. Psychol. Wych., No. 2, 158-169, 1961.

Ingalls, T. H.: German measles and German measles in pregnancy. Am. J. Dis. Child., *93*:555-558, 1957.

Ingalls, T. H.: Causes and prevention of developmental defects. J.A.M.A., *167*:, 1960,a.

Ingalls, T. H.: Environmental Factors in Causation of Congenital Anomalies. *In* Wolstenholme, G. E. W., and O'Connor, C. M. (ed.): Ciba Foundation Symposium on Congenital Malformations. Boston, Little, Brown and Co., 1960,b.

Ingrahm, T. T. S.: Clinical significance of the infantile feeding reflexes. Development Med. Child Neurol., *4*:159-169, 1962.

Ingram, V. M.: How do genes act? Scient. Am., January, 1958.

Inhelder, B.: Some aspects of Piaget's genetic approach to cognition. *In* Monogr. Soc. Res. Child Development, Series 83, 27(2):19-34, 1962.

Inhelder, B. and Piaget, J.: The Growth of Logical Thinking from Childhood to Adolescence. New York, Basic Books, Inc., 1958.

Inselberg, R. M.: Social and psychological factors associated with high school marriages. J. Home Econ., *53*:766-772, 1961.

Institute Communication Research: 1962 Television: The Next Ten Years. Palo Alto, Stanford University Press, 1962.

International Children's Center: Courrier. Château de Longchamp-Bois de Boulogne, Paris, Centre International De l'Enfance. Monthly magazine with annotated bibliography.

Irwin, O. C.: Infant speech: effect of systematic reading of stories. J. Speech & Hearing Res., *3*:187-190, 1960.

Irwin, O. C.: Difficulties of consonant and vowel sounds in the speech of children with cerebral palsy. Cerebral Palsy Rev., *22*(5):14-15, 1961.

Irwin, O. C.: A second comparative study of articulation of children with cerebral palsy and of mentally retarded children. Cerebral Palsy Rev., *23*(1):17-19, 1962.

Israel, S.: The onset of menstruation in Indian women. J. Obst. Gynaec. Brit. Emp., 66:311-316, 1959.

Izmuzi, H.: Studies of premature children. Jap. J. Educ. Psychol., *11*:43-47, 1963.

Jack, L. M.: An Experimental Study of Ascendant Behavior in Preschool Children. University of Iowa Studies, Child Welfare Research Station, 9(3):17-65, 1934.

Jackson, L.: A study of 200 school children by means of the test of family attitudes. Brit. J. Psychol., *55*(3):333-354, 1964.

Jackson, R. L., et al.: Degenerative changes in young diabetic patients in relationship to level of control. Pediat., *5*:959-971, 1950.

Jacobsen, A. W., and Macklin, N. T.: Hereditary sexual precocity; a report of a family with 27 affected members. Pediat., *9*:682-695, 1952.

Jacobziner, H.: Health services for the school-age child—a new approach. J.A.M.A., *165*:1669-1677, 1957.

James, W.: Principles of Psychology. New York, Henry Holt & Co., Inc., 1890.

Jarecki, H. C.: Maternal attitudes toward child rearing. Arch. Gen. Psychiat., *4*:340-356, 1961.

Jay, P., and Bennett, A. S.: Role of diet in the control of dental caries. J. Am. Dent. A., *52*:18-25, 1956.

Jelliffe, D. B.: Cultural variation and the practical pediatrician. J. Pediat., *49*:661-671, 1956.

Jensen, A.: Learning ability in retarded, average and gifted children. Merrill-Palmer Quart., 9(2):123-140, 1963.

Jensen, K.: Physical growth. Rev. Educ. Research, *28*:375-391, 1958.

Jersild, A. T.: Child Psychology. 5th ed. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1960.

Johnson, M. M.: Sex role learning in the nuclear family. Child Development, *34*:319-333, 1963.

Johnson, R. C.: A study of children's moral judgments. Child Development, *33*:327-354, 1962.

Johnson, R. D.: Measurements of achievement in fundamental skills of elementary school children. Res. Quart. AAHPER, *33*:94-103, 1962.

Johnson, W., et al.: The Onset of Stuttering and What You Can Do About It. Research Findings and Implications. Minneapolis, University of Minnesota Press, 1959.

Johnston, J. A.: Adolescence. *In* McQuarrie, I. (ed.): Brennemann's Practice of Pediatrics. Vol. I. Hagerstown, Md., W. F. Prior Co., Inc., 1957.

Johnston, J. A.: Factors influencing retention of nitrogen and calcium in period of growth. VI. The calcium and vitamin D requirements of the older child. Am. J. Dis. Child., *67*:265-274, 1944.

Jolliffe, N.: Reduce and Stay Reduced. New York, Simon and Schuster, Inc., 1952.

Jolly, H.: Sexual Precocity. Springfield, Ill., Charles C Thomas, 1955.

Jones, E. S. The probation student: What he is like and what can be done about it. J. Educ. Res., *49*:93-102, 1955.

Jones, H. E.: Principles and methods of the adolescent growth study. J. Consult. Psychol., *3*:157-159, 1939.

Jones, H. E.: Motor Performance and Growth: A Developmental Study of Static Dynamometric Strength. University of California Publications in Child Development. Vol. I. Berkeley, University of California Press, 1949.

Jones, H. E.: The environment and mental development. *In* Carmichael, L. (ed.): Manual of Child Psychology. 2nd ed. New York, John Wiley & Sons, Inc., 1954.

Jones, H. E.: Motor Development and Coordination in the Adolescent. *In* Physical and Behavioral Growth. Report of the 26th Ross Pediatric Research Conference, San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.

Jones, H. E.: The longitudinal method in the study of

personality. *In* Iscoe, I., and Stevenson, H. (ed.): Personality Development in Children. Austin, University of Texas Press, 1960.

Jones, M. C.: The later careers of boys who were early- or late-maturing. Child Development, *28*:113-128, 1957.

Jones, M. C., and Bayley, N.: Physical maturing among boys as related to behavior. J. Educ. Psychol., *41*:129-148, 1950.

Jones, M. C., and Mussen, P. H.: Self-conceptions, motivations and interpersonal attitudes of early- and late-maturing girls. Child Development, *29*:491-501, 1958.

Jones, M. R. (ed.): Nebraska Symposium on Motivation. Lincoln, Neb., Nebraska University Press, 1963.

Jones, P. R. M., and Dean, R. F. A.: The effects of kwashiorkor on the development of the bones of the knee. J. Pediat., *54*:176-184, 1959.

Jonxis, J. H. P.: Nutritional status of Dutch children in war time. Nutrition Rev., *4*:97-99, 1946.

Joos, T. H., and Johnston, J. A.: A long-term evaluation of the juvenile diabetic. J. Pediat., *50*:133-137, 1957.

Jordan, T. E.: Research on the handicapped child and the family. Merrill-Palmer Quart., *8*(4):243-260, 1962.

Jordan, W. A., and Peterson, J. K.: Caries-inhibiting value of a dentifrice containing stannous fluoride: final report of a two year study. J. Am. Dent. A., *58*:42-44, 1959.

Joseph, K., et al.: The metabolism of nitrogen, calcium and phosphorus in undernourished children. 3. The effect of a supplementary multipurpose food on the metabolism of nitrogen, calcium and phosphorus. Brit. J. Nutrition, *11*:388-391, 1957.

Jost, H., and Sontag, L. W.: The genetic factor in autonomic nervous system function. Psychosom. Med., *6*:308-310, 1944.

Jung, C. G.: Symbols of Transformation: An Analysis of the Prelude to a Case of Schizophrenia. (Trs. by R. F. C. Hull.) New York, Harper & Bros., 1962.

Kagan, J.: The concept of identification. Psychol. Rev., *65*:296-305, 1958.

Kagan, J., and Freeman, M.: Relation of childhood intelligence, maternal behaviors, and social class to behavior during adolescence. Child Development, *34*:899-911, 1963.

Kagan, J., Hosken, B., and Watson, S.: Child's symbolic conceptualization of parents. Child Development, *32*:625-636, 1961.

Kagan, J., and Lemkin, J.: The child's differential perception of parental abilities. J. Abnorm. & Social Psychol., *61*:440-447, 1960.

Kagan, J., and Lemkin, J.: Form, color, and size in children's conceptual behavior. Child Development, *32*(1):25-28, 1961.

Kagan, J., and Moss, H. A.: The stability of passive and dependent behavior from childhood through adulthood. Child Development, *31*:577-591, 1960.

Kagan, J., and Moss, H. A.: Psychological significance of styles of conceptualization. *In* Wright, J. C., and Kagan, J.: Basic Cognitive Processes in Children. Monogr. Soc. Res. Child Development, Series 86, *28*(2):73-112, 1963.

Kagan, J., Moss, H. A., and Sigel, I. E.: Conceptual style and the use of affective labels. Merrill-Palmer Quart., *6*(No. 4):261-278, July, 1960.

Kagan, J., Moss, H. A., and Sigel, I. E.: Psychological significance of styles of conceptualization. *In* Wright, J. C., and Kagan, J. (ed.): Basic Cognitive Processes in Children. Monogr. Soc. Res. Child Development, Series 86, *28*(2). Lafayette, Ind., Child Devel. Pubs., 1963.

Kagan, J., and Mussen, P.: Dependency themes on the TAT and group conformity. J. Consult. Psychol., *20*:29-32, 1956.

Kahn, A. J.: Planning Community Services for Children in Trouble. New York, Columbia University Press, 1963.

Kamin, S. H., et al.: Group dynamics in the treatment of epilepsy. J. Pediat., *53*:410-412, 1958.

Kanner, L.: A Word to Parents About Mental Hygiene. Madison, University of Wisconsin Press, 1957.

Kanner, L.: A History of the Care and Study of the Mentally Retarded. Springfield, Ill., Charles C Thomas, 1964.

Kanous, L. E., Daugherty, R. A., and Cohn, T. S.: Relation between heterosexual friendship choices and socioeconomic level. Child Development, *33*:251-255, 1962.

Kantos, M. B., et al.: Socio-economic level and maternal attitudes toward parent-child relationships. Hum. Org., *16*:44-48, 1958.

Kaplan, S. A.: Growth Disorders in Children and Adolescents. Springfield, Ill., Charles C Thomas, 1964.

Käräng, G.: Creative ability in graphic art: Some underlying factors. Scandinav. J. Psychol., *5*:59-64, 1964.

Karon, B. P.: The Negro Personality. New York, Springfield Publishing Co., 1958.

Karpinos, B. D.: Height and weight of selective service registrants processed for military service during World War II. Hum. Biol., *30*:292-321, 1958.

Kaufman, H.: Task performance and responses to failure as functions of imbalance in the self-concept. Psychol. Monogr.: General & Applied., *77*(6): No. 569, 1963.

Kausler, D. H., Laughlin, P. R., and Trapp, E. P.: Effects of incentive-set on relevant and irrelevant (incidental) learning in children. Child Development, *34*:195-199, 1963.

Kawi, A. A., and Pasamanick, B.: Association of factors of pregnancy with reading disorders in childhood. J.A.M.A., *166*:1420-1423, 1958.

Keddie, J. A. G.: Heights and weights of Scottish children. Brit. J. Prev. Soc. Med., *10*:1-14, 1956.

Keeton, R. W.: Nutrition and appetite training during illness. J.A.M.A., *151*:253-260, 1953.

Kell, L., and Aldous, I.: The relation between mothers' child-rearing ideologies, and their children's perceptions of maternal control. Child Development, *31*:145-156, 1960.

Keller, E. D., and Rowley, V. N.: Anxiety, intelligence, and scholastic achievement in elementary school children. Psychol. Rep., *11*:19-22, 1962, a.

Keller, E. D., and Rowley, V. N.: Junior high school and additional elementary school normative data for the Children's Manifest Anxiety Scale. Child Development, *33*:675-681, 1962, b.

Kelly, R., and Stephens, M. W.: Comparison of different patterns of social reinforcement in children's operant learning. J. Comp. Physiol., *57*:294-296, 1964.

Kempe, O., et al.: The battered child syndrome. J.A.M.A., July, 1962.

Kendler, T. S.: Development of Mediating Responses in Children. *In* Wright, J. C., and Kagan, J.: Basic Cognitive Processes in Children. Report of the Second Conference Sponsored by the Committee on Intellectual Processes Research of the Social

Science Research Council. Soc. Res. Child Development, Serial No. 86, *28*(2):33-52, 1963.

Keniston, K.: Social change and youth in America. Daedalus, *91*:145-171, 1962.

Kennedy, W. A.: M.M.P.I. profiles of gifted adolescents. J. Clin. Psychol., *18*:148-149, 1962.

Kennedy, W. A., Van De Riet, V., and White, J. C., Jr.: A normative sample of intelligence and achievement of Negro elementary school children in the Southeastern United States. Monogr. Soc. Res. Child Development, *28*(6), 1963.

Kessen, W.: Research in the psychological development of infants. Merrill-Palmer Quart., *9*(2):83-94, 1963,a.

Kessen, W.: Research in the psychological development of infants: An overview. *In* Sigel, I. E. (ed.): Selected papers on Research in Infant Development from the 1962 Merrill-Palmer Conference. Merrill-Palmer Quart., April, 1963, b.

Kessen, W., and Kuhlman, C. (ed.): Thought in the Young Child. Monogr. Soc. Res. Child Development, *27*(2). Lafayette, Ind., Child Development Pub., 1962.

Kessen, W., and Leutzendorff, A.: The effect of non-nutritive sucking on movement in the human newborn. J. Comp. & Physiol. Psychol., *56*(1):69-72, 1963.

Kessen, W., Williams, J., and Williams, J.: Selection and test of response measurements in the study of the human newborn. Child Development, *32*:7-24, 1961.

Ketcham, W. A.: Growth patterns of gifted children. Merrill-Palmer Quart., *1*:188-197, 1957.

Ketcham, W. A.: Relationship of physical traits and mental traits in intellectually gifted and mentally retarded boys. Merrill-Palmer Quart., *6*(3):171-177, April, 1960.

Keys, A., Brozek, J., Henschel, A., Mickelson, O., and Taylor, H. L.: The Biology of Human Starvation. Vols. I and II. Minneapolis, The University of Minnesota Press, 1950.

Kiell, N.: The Universal Experience of Adolescence. New York, International Universities Press, 1964.

Kinsey, A. C., et al.: Sexual Behavior in the Human Male. Philadelphia, W. B. Saunders Co., 1948.

Kinsey, A. C., et al.: Sexual Behavior in the Human Female. Philadelphia, W. B. Saunders Co., 1953.

Kinstler, D. B.: Covert and overt material rejection in stuttering. J. Speech & Hear. Dis., *26*:145-155, 1961.

Kirk, S. A.: Educating Exceptional Children. Boston, Houghton Mifflin Co., 1962.

Kirschvink, J. F., Sorrell, H., Ferrier, P. E., and Kelley, V. C.: Study of anabolic steroids. I. Comparison of the effects of norethandrolone and methyltestosterone on height and skeletal maturation in mongoloid children. Am. J. Dis. Child., *106*:368-374, 1963.

Kistyakovskaya, M. Y.: Development of hand and arm movements in children in the first six months. Vop. Psikhol., (*1*): 89-100, 1962.

Klauer, K. J.: [Defective vision and intelligence.] Z. exp. angew Psychol., *9*(4):570-593, 1962.

Klein, H., and Palmer, C. E.: Medical evaluation of nutritional status. Susceptibility to dental caries and family income. Milbank Mem. Fund Quart., *20*:169-177, 1942.

Kleitman, N.: The Nature of Dreaming. *In* Wolstenholme, G. E. W., and O'Connor, M. (ed.): Ciba Foundation Symposium on the Nature of Sleep. Boston, Little, Brown and Co., 1960.

Kluckholm, F. R., and Strodtbeck, F. L.: Varieties in Value Orientation. Evanston, Ill., Row, Peterson & Co., 1961.

Knights, R. M.: Test anxiety and defensiveness in institutionalized and noninstitutionalized normal and retarded children. Child Development, *34*: 1019-1026, 1963.

Knoblock, H., and Pasamanick, B.: Environmental factors affecting human development before and after birth. Pediatrics, *26*:210-218, 1960.

Koch, H. L.: Some personality correlates of sex, sibling position, and sex of sibling among five- and six-year-old children. Genet. Psychol. Monogr., *52*:3-50, 1955.

Koch, H. L.: Sissiness and tomboyishness in relation to sibling characteristics. J. Genet. Psychol., *88*:231-244, 1956.

Koch, H. L.: The relation in young children between characteristics of their playmates and certain attributes of their siblings. Child Development, *28*:175-202, 1957.

Koch, H. L.: The relation of certain formal attitudes of siblings to attitudes held toward each other and toward parents. Monogr. Soc. Res. Child Development, Series 78, *25*(4), 1960.

Koch, M. B.: Anxiety in preschool children from broken homes. Merrill-Palmer Quart., *7*(4):225-232, 1961.

Kodlin, D., and Thompson, D. J.: An Appraisal of the Longitudinal Approach to Studies of Growth and Development. Soc. Res. Child Development Monogr. *23*(1). Lafayette, Ind., Child Development Publications, 1958.

Kodman, F., Jr., Spies, C., Stockdell, K., and Sedeacek, G.: Socioeconomic status and observer identification of hearing loss in school children. Except. Child, *26*:176-179, 1959.

Kohlberg, L.: The Development of Modes of Moral Thinking and Choice in the Years Ten to Sixteen. Unpublished doctoral dissertation, University of Chicago, 1958.

Kohlberg, L.: Sex differences in morality. *In* Maccoby, E. (ed.): Sex Role Development. N. Y. Soc. Science Res. Council, 1962 (Mimeographed).

Kohlberg, L.: Child rearing antecedents of strength of conscience. Nat. Soc. Stud. Educ. Yearbook, *1*:278-332, 1963,a.

Kohlberg, L.: The development of children's orientations toward a moral order. I: Sequence in the development of moral thought: Vita Humane, *6*:11-33, 1963,b.

Kohlberg, L.: Moral development and identification. Introduction to the concepts of morality and of moral development. Nat. Soc. Stud. Educ. Sixty-second Yearbook, *1*:277-332, 1963,c.

Kohlberg, L.: The development of children's orientations toward a moral order. II: Social experience, social conduct, and the development of moral thought. Vita Humana, 1964.

Kohn, M. L.: Social class and parental values. Am. J. Sociol., *64*:337-351, 1959.

Konishi, T.: On the development of language in infants. Jap. J. Child Psychiat., *1*:62-74, 1960.

Konopka, G.: Adolescent delinquent girls. Children, *11*(1):21-64, 1964.

Koppitz, E. M.: Relationships between the Bender Gestalt Test and the Wechsler Intelligence Test for Children. J. Clin. Psychol., *14*:413-416, 1958.

Kralj-cercek, L.: The influence of food, body build

and social origin on the age at menarche. Hum. Biol., *28*:393-406, 1956.

Krogman, W. M.: The concept of maturity from a morphological viewpoint. Child Development, *21*: 25-32, 1950,a.

Krogman, W. M.: Handbook of Measurement and Interpretation of Height and Weight in the Growing Child. Soc. Res. Child Development Monogr. *13*(3). Evanston, Ill., Child Development Publications, 1950,b.

Krogman, W. M.: Biological growth as it may affect pupil's success. Merrill-Palmer Quart., *1*:90-98, 1955.

Krogman, W. M.: The Physical Growth of Children: An Appraisal of Studies 1950-1955. Soc. Res. Child Development Monogr. *20*(1). Lafayette, Ind., Child Development Publications, 1956.

Krogman, W. M.: Problems in Growth and Development of Interest to the Dentist. Dent. Clin. North America. Philadelphia, W. B. Saunders Co., July, 1958.

Krogman, W. M.: Maturation age of 55 boys in the Little League World Series, 1957. Res. Quart. AAHPER, *30*:54-56, 1959.

Krogman, W. M.: A human biologist looks at the contemporary scene. Child Development, *32*(3): 417-422, 1961.

Kron, R. E., Stein, M., and Goddard, K. E.: A method of measuring sucking behavior of newborn infants. Psychosom. Med., *25*:181-191, 1963.

Krugman, S., and Ward, R.: The rubella problem. Clinical aspects, risk of fetal abnormality and methods of prevention. J. Pediat., *44*:489-498, 1954.

Kubala, A. L., and Katz, M. M.: Nutritional factors in psychological test behavior. J. Genet. Psychol., *96*:343-352, 1960.

Kucera, J., and Benešová, D.: [Disturbances of intrauterine development due to attempted abortion.] Cesk. Pediat., *17*:483-489, 1962.

Kulp, J. L., Schulert, A. R., and Hodges, E.: Strontium-90 in man. IV. Science, *132*:448-454, 1960.

Kurty, K. H., and Hovland, C. I.: The effect of verbalization during observation of stimulus objects upon accuracy of recognition and recall. J. Genet. Psychol., *45*:157-164, 1953.

L'Abate: Stanford's uncertainty hypothesis in children. Rev. Gen. Semant., *14*:210-221, 1957.

Lacey, J. I., et al.: Autonomic response specificity and Rorschach color responses. Psychosom. Med., *14*: 256-260, 1952.

Laing, A.: The sense of humor in childhood and adolescence. Brit. J. Educ. Psychol., 9:201, 1939.

Laird, D. A., and Breen, W. J.: Sex and age alteration in taste preference. J. Am. Dietet. A., *15*:549-550, 1939.

LaMar, T. E., and Rabow, J.: The Provo experiment in delinquency rehabilitation. Am. Sociol. Rev., *26*: 679-696, 1961.

Landauer, T. K.: Two hypotheses concerning the biochemical basis of memory. Psychol. Rev., *71*(3): 167-179, 1964.

Landis, J. L., and Landis, M. G.: Building a Successful Marriage. 3rd ed. Englewood Cliffs, N. J. Prentice-Hall, Inc., 1958.

Landis, J. T.: A re-examination of the role of the father as an index of family integration. Marriage & Family Living, *24*:122-128, 1962.

Landis, J. T.: Dating maturation of children from happy and unhappy marriages. Marriage & Family Living, *25*:351-353, 1963.

Landis, P. H.: Adolescence and Youth. The Process of Maturing. 2nd ed. New York, McGraw-Hill Book Co., Inc., 1952.

Landreth, C.: Parent-child Interactions and Children's Behavior. *In* Physical and Behavioral Growth. Report of the 26th Ross Pediatric Research Conference, San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.

Landreth, C.: Four-year-olds' notions about sex appropriateness of parental care and companionship activities. Merrill-Palmer Quart., *9*(3):175-182, 1963.

Landreth, C., and Johnson, B. C.: Young children's responses to a picture inset test designed to reveal reactions to persons of different skin color. Child Development, *24*:63-80, 1953.

Landy, D.: Tropical Childhood. Chapel Hill, University of North Carolina Press, 1959.

Langdon, G., and Stout, I. W.: Helping Parents Understand Their Child's School: A Handbook for Teachers. Englewood Cliffs, N.J., Prentice-Hall, Inc., 1957.

Lansing, A. I. (ed.): Problems of Aging. 3rd ed. Baltimore, The Williams & Wilkins Co., 1952.

Lansky, L. M., Crandall, J., Kagan, J., and Baker, C. T.: Sex differences in aggression and its correlates in middle-class adolescents. Child Development, *32*: 45-48, 1961.

Lantagne, J. E.: Interests of 4000 high school pupils in problems of marriage and parenthood. Research Quart., *29*:407-416, 1958.

Larder, D. L.: Effect of aggressive story content on nonverbal play behavior. Psychol. Rep., *11*:14, 1962.

Lark-Horowitz, B., and Norton, J.: Children's art abilities: the interrelations and factional structures of ten characteristics. Child Development, *31*:453-462, 1960.

Laroche, J. L.: [Studies in the aptitudes of students in industrial Katanga.] Travail Hum., *23*:69-79, 1960.

Lasker, G.: The effect of partial starvation on somatotype: an analysis of material from the Minnesota starvation experiment. Am. J. Phys. Anthropol., *5*:322-333, 1947.

Lasswell, H. D., and Kaplan, A.: Power and Society: A Framework for Political Inquiry. New Haven, Yale University Press, 1950.

Laudeck, B.: Children and Music. New York, William Sloan Associates, 1952.

Lavine, L. S., Moss, M. L., and Noback, C. R.: Digital epiphyseal fusion in adolescence. J. Pediat., *61*: 571-751, 1962.

Lawson, R., and Marx, M. H.: Frustration: theory and experiment. Genet. Psychol. Monogr., *57*:393-464, 1958.

Laycock, S. R.: Gifted Children. Toronto, The Copp Clark Co., Ltd., 1957.

Layman, E. M.: Discussion of symposium on father influences in the family. Merrill-Palmer Quart. *7*(2):108-112, 1961.

Lazar, M.: Individualized readings: a program of seeking self-selection, and pacing. Reading in Action, *2*:141-144, 1957.

Leamy, C. M.: The nutrition of mothers and children. J. Home Econ., *45*:25-28, 1953.

Lease, E. J.: Corn meal enrichment. J. Am. Dietet. A., *29*:866-872, 1953.

Leavitt, J. E. (ed.): Nursery–Kindergarten Education. New York, McGraw-Hill Book Co., Inc., 1958.

Lee, D.: Cultural factors in dietary choice. Am. J. Clin. Nutrition, *5*:166-170, 1957.

Lee, D. H. K.: Climate and Economic Development in the Tropics. New York, Harper & Bros., 1957.

Lee, J. M., and Lee, D. M.: The Child and His Development. New York, Appleton-Century-Crofts, Inc., 1958.

Lee, L. C., Kagan, J., and Rabson, A.: Influence of preference for analytic categorization upon concept acquisition. Child Development, *34*:433-442, 1963.

Lefkowitz, M. M., Walder, L. O., and Eron, L. D.: Punishment, identification and aggression. Merrill-Palmer Quart., *9*(3):159-174, 1963.

Lehmann, I. J.: Responses of kindergarten children to the Children's Apperception Test. J. Clin. Psychol. *15*:60-63, 1959.

Leicester, H. M.: Dentistry. *In* Cutting, W. C. (ed.): Annual Review of Medicine. Vol. 5. Palo Alto, California, Annual Reviews, Inc., 1954.

Leichty, M. M.: The effect of father-absence during early childhood upon oedipal situations as reflected in young adults. Merrill-Palmer Quart., *6*(4):212-217, 1960.

Leiman, A. H., Myers, J. L., and Myers, N. A.: Secondary reinforcement in a discrimination problem with children. Child Development, *32*(2):349-354, 1961.

Leiris, M.: Race and Culture. Paris, UNESCO, 1951.

Lemasters, E. E.: Modern Courtship and Marriage. New York, The Macmillan Co., 1957.

Lembright, M. L., and Yamamoto, K.: Subcultures and creative thinking: An exploratory comparison between Amish and urban American school children. Merrill-Palmer Quart., *11*(1):49-64, 1965.

Lemert, E. M.: Stuttering and social structure in two Pacific societies. J. Speech & Hearing Dis., *27*:3-10, 1962.

Lennox, W. G.: The heredity of epilepsy as told by relatives and twins. J.A.M.A., *146*:529-536, 1951.

Lennox, W. G.: The social and emotional problems of the epileptic child and his family. J. Pediat., *44*:591-601, 1954.

Lennox, W. G.: The social and emotional problems of the epileptic child and his family. *In* Haimowitz, M. L., and Haimowitz, N. R.: Human Development: Selected Readings. New York, Thomas Y. Crowell Co., 1960, pp. 458-467.

Lerner, E.: The Problem of Perspective in Moral Reasoning. (Unpublished). Reported in Murphy, L. B.: Social Behavior and Child Personality. New York, Columbia University Press, 1937.

Lesser, A. J.: Changing emphasis in school health program. Children, *5*:9-14, 1958.

Lessing, E. E.: A note on the significance of discrepancies between Goodenough and Binet I.Q. scores. J. Consult. Psychol., *25*:456-457, 1961.

Leton, D. A.: A study of the validity of parent attitude measurement. Child Development, *29*:515-520, 1958.

Leventhal, T., and Sills, M. R.: The issue of control in therapy with character problems in adolescents. Psychiatry, *26*:149-167, 1963.

Leverton, R. M.: Nutrition in adolescence. *In* The Life Cycle and Its Diet. A Symposium on Recent Findings in Human Nutrition. J. Home Econ., *49*:107-109, 1957.

Levin, H., and Baldwin, A. L. Pride and Shame in Children. *In* Nebraska Symposium on Motivation. Lincoln, Neb., University of Nebraska Press, 1959.

Levin, H., and Sears, R. R.: Identification with parents as a determinant of doll play aggression. Child Development, *27*:135-153, 1956.

Levin, H., and Turgeon, V. F.: The influence of the mother's presence on children's doll play aggression. J. Abnorm. Psychol., *55*:304-308, 1957.

Levine, H., and Wardwell, E.: The research uses of doll play. Psychol. Bull., *59*:27-56, 1962.

Levine, K.: Cerebral Palsy. Baltimore, The Williams & Wilkins Co., 1965.

Levinson, B. M.: A comparison of the performance of bilingual and monolingual native born Jewish preschool children of transitional parentage on four intelligence tests. J. Clin. Psychol., *15*:74-76, 1959.

Levy, D. M.: The infant's earliest memory of inoculation: a contribution to public health procedures. J. Genet. Psychol., *96*:3-46, 1960.

Lewis, M. M.: Language, Thought and Personality in Infancy and Childhood. New York, Basic Books, Inc., 1964.

Lewis, M. M.: How Children Learn to Speak. London, Geo. H. Harrap & Co., Ltd., 1957.

Lewis, O.: The Children of Sanchez: Autobiography of a Mexican Family. New York, Random House, 1961.

Lézine, I., and Spionek, H.: Quelques problèmes de développement psycho-moteur et d'éducation des enfants dans les crèches. Enfance, *11*:245-267, 1958.

Lilburn, A.: The effect of distractions on the work of primary school children. Educ. Rev., *15*:26-36, 1962.

Lilienfeld, A. M., and Pasamanick, B.: Association of maternal and fetal factors with development of epilepsy: I. Abnormalities in prenatal and paranatal periods. J.A.M.A., *155*:719-724, 1954.

Lindgren, H. C.: The effect of the group on the behavior of the individual. Education, *73*:383-387, 1953.

Lippitt, R., and White, R. K.: An experimental study of leadership and group life. *In* Maccoby, E. E., et al. (ed.): Readings in Social Psychology. 3rd ed. New York, Henry Holt & Co., Inc., 1958.

Lipset, S. M.: Political Man. Garden City, N.Y., Doubleday & Co., 1960.

Lipsitt, L. P.: Simultaneous and successive discrimination learning in children. Child Development, *32*:337-347, 1961.

Lipsitt, L. P., et al.: Effects of delayed reward pretraining on discrimination learning of children. Child Development, *30*:273-278, 1958.

Lipsitt, L. P., Engen, T., and Kaye, H.: Developmental changes in the olfactory threshold of the neonate. Child Development, *34*:371-376, 1963.

Lipsitt, L. P., and Levy, N.: Pain threshold in the human neonate. Child Development, *30*:547-555, 1959.

Lipsitt, L. P., and Serunian, S. A.: Oddity-problem learning in young children. Child Development, *34*:201-206, 1963.

Lipton, E. L., and Steinschneider, A.: Studies on the psychophysiology of infancy. Merrill-Palmer Quart., *10*(2):103-117, 1964.

Livson, N., and Bronson, W.: An exploration of patterns of impulse control in early adolescence. Child Development, 32:75-88, 1961.

Livson, N., and McNeill, D.: Variability in male stature as a function of adolescent maturation rate. Science, *133*:708-709, 1961.

Logan, G. B.: Competitive athletics and physical fitness. *In* Physical and Behavioral Growth. Report of the 26th Ross Pediatric Research Conference. San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.

Logan, G. B.: Essential medical supervision in athletics for children. J.A.M.A., 786-794, 1959.

Lombard, O. M.: Breadth of bone and muscle by age and sex in childhood. Child Development, *21*:229-239, 1950.

London, I. D.: Research on sensory interaction in the Soviet Union. Psychol. Bull., *51*:531-568, 1954.

London, N. L., and Myers, J. K.: Young offenders. Am. Arch. Gen. Psychiat., *4*:274-282, 1961.

Lott, A. J., and Lott, B. E.: Negro and White Youth. New York, Holt, Rinehart & Winston, 1963.

Lotter, W. S. Specificity or generality of speed of systematically related movements. Res. Quart. AAHPER, 32:55-62, 1961.

Lourie, R. S.: A pediatric-psychiatric viewpoint, in obesity. (A panel discussion.) Am. Acad. Pediat. Proceedings. Pediat., *20*:552-565, 1957.

Lövaas, O. I.: Effect of exposure to symbolic aggression on aggressive behavior. Child Development, 32: 37-44, 1961,a.

Lövaas, O. I.: Interaction between verbal and non-verbal behavior. Child Development, *32*:329-336, 1961,b.

Lovell, K., Mitchell, B., and Everett, I. R.: An experimental study of the growth of some logical structures. Brit. J. Psychol., *53*(2): 175-188, 1962.

Lowenfeld, B.: Our Blind Children: Growing and Learning with Them. 2nd ed. Springfield, Ill., Charles C Thomas, 1964.

Lowenfeld, V.: Creative and Mental Growth. 3rd ed. New York, The Macmillan Co., 1958.

Lubchenco, L. O., Homer, F. A., Reed, L. H., Hix, T. E., Jr., Metcalf, D., Cohig, R., Elliott, H. C., and Bourg, M.: Sequelae of premature birth. Am. J. Dis. Child., *106*:101-115, 1963.

Lucas, C. M., and Horrocks, J. E.: An experimental approach to the analyses of adolescent needs. Child Development, *31*:479-487, 1960.

Luria, A. R.: The Role of Speech in the Regulation of Normal and Abnormal Behavior. New York, Pergamon Press, 1961.

Lustman, S. L.: Rudiments of ego. Psychanal. Study Child., *11*:89-98, 1956.

Lyford, J. P.: Proposal for revolution. Part 2. The first order of business. Saturday Review, Oct. 26, 1963, pp. 25-69.

Lynn, D. B.: Sex-role and parental identification. Child Development, *33*(3):555-564, 1962.

Lynn, D. B.: Divergent feedback and sex-role identification in boys and men. Merrill-Palmer Quart., *10*(1):17-23, 1964.

Lynn, D. B., and Sawrey, W. L.: The effects of father-absence on Norwegian boys and girls. J. Abnorm. & Social Psychol., *59*:258-262, 1959.

MacGinitie, W. H.: Ability of deaf children to use different word classes. J. Speech & Hearing Res., 7(1):141-150, 1964.

McAulay, J. D.: What understanding do second grade children have of time relationships? J. Educ. Res., *54*:312-314, 1961.

McCandless, B. R.: Children and Adolescents, Behavior and Development. New York, Holt, Rinheart & Winston, 1961,a.

McCandless, B. R.: Peer popularity and dependence on adults in preschool-age socialization. Child Development, *32*:511-518, 1961,b.

McCandless, B. R., and Castaneda, A.: Anxiety in children, school achievement, and intelligence. Child Development, *27*:379-382, 1956.

McCandless, B. R., and Marshall, H. R.: Sex differences in social acceptance and participation of preschool children. Child Development, *28*:421-425, 1957.

McCarthy, D.: Language disorders and parent-child relationships. J. Speech & Heaving Dis., *19*:514-523, 1954.

McCarthy, D.: Language Development in Children. *In* Carmichael, L. (ed.): Manual of Child Psychology. 3rd ed. New York, John Wiley & Sons, Inc., 1960.

Maccoby, E. E.: Role-taking in childhood and its consequences for social learning. Child Development, *30*:239-252, 1959.

Maccoby, E. E., et al.: The effects of emotional arousal on the retention of film content: a failure to replicate. J. Abnorm. Social Psychol., *53*:373-374, 1956.

Maccoby, E. E.: The taking of adult roles in middle childhood. J. Abnorm. & Social Psychol., *63*:493-504, 1961.

Maccoby, E. E., Newcomb, I. M., and Hartley, E. L. (ed.): Readings in Social Psychology. 3rd ed. New York, Henry Holt & Co., Inc., 1958.

Macfarlane, J. W.: The significance of early or late maturation. *In* Physical and Behavioral Growth. Report of the 26th Ross Pediatric Research Conference, San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.

Macfarlane, J. W., et al.: A Developmental Study of the Behavior Problems of Normal Children Between Twenty-One Months and Fourteen Years. Berkeley, University of California Press, 1954.

McCord, J., and McCord, W.: The effects of parental role models on criminality. J. Soc. Issues, *14*:66-75, 1958.

McCord, J., McCord, W., and Thurber, E.: Some effects of paternal absence on male children. J. Abnorm. & Social Psychol., *64*:361-369, 1962.

McCord, W., McCord, J., and Verden, P.: Familial and behavioral correlates of dependency in male children. Child Development, *33*:313-326, 1962.

McCreary, A. P.: A study of association, reinforcement, and transfer in beginning reading. J. Exp. Educ., *31*:285-290, 1963.

McDonald, F. J.: Children's judgments of theft from individual and corporate owners. Child Development, *34*:141-150, 1963.

McGraw, M. B.: Maturation of Behavior. *In* Carmichael, L. (ed.): Manual Child Psychology. New York, John Wiley & Sons, Inc., 1946.

McIntire, S., and Dutch, S. J.: Mongolism and generalized hypotonia. Am. J. Ment. Deficiency, *68*:669-670, 1964.

McKendrick, T.: Poisoning accidents in childhood. Arch. Dis. Childhood, 35:127-133, 1960.

McNeil, E. B.: Psychology and aggression. J. Conflict & Resolution, 3:1-75, 1959.

McNeil, E. B.: A review of Patton, R. G., and Gardner, L. I.: Growth Failure in Maternal Deprivation. Springfield, Ill., Charles C Thomas, 1963.

McNeill, D., and Livson, N.: Maturation rate and body build in women. Child Development, *34*:125-132, 1963.

McReynolds, P., and Acker, M.: Relation of object curiosity to psychological adjustment in children. Child Development, *32*(2):393-400, 1961.

Maas, H. S.: Long term effects of early childhood separation and group care. Vita Humana, *6*:34-56, 1963.

Macy, I. G.: Nutritional and Chemical Growth in Childhood. Vol. I. Evaulation. Springfield, Ill., Charles C Thomas, 1942.

Macy, I. G.: Nutrition and the teenager's reference papers on children and youth. White House Conference on Children and Youth, Washington, D.C., January, 1960.

Macy, I. G., and Hunscher, H. A.: Calories . . . a limiting factor in the growth of children. J. Nutrition, *45*:189-199, 1951.

Macy, I. G., and Kelly, H. J.: Chemical Anthropology. A New Approach to Growth in Children. Chicago, University of Chicago Press, 1957.

Magnifico, L.: Education for the Exceptional Child. New York, Longmans, Green & Co., Inc., 1958.

Malmivaara, K., and Kolho, P.: The personality of 5- to 7-year-old enuretics in the light of the Sceno and Rorschach tests. Ann. paediat. Fenniae, *8*:166-172, 1962.

Mandler, G.: Parent and child in the development of the Oedipus complex. J. Nerv. Ment. Dis., *136*: 227-235, 1963.

Mangau, K. R.: Speech improvement (of deaf children) through articulation testing. Am. Ann. Deaf., *106*:391-396, 1961.

Mannino, F. V.: Family factors related to school persistence. J. Educ. Sociol., 1962.

Marble, A.: The future of the child with diabetes. J. Am. Dietet. A., *33*:569-574, 1957.

Marche, J., and Gounelle, H.: The relation of protein scarcity and modification of blood protein to tuberculosis among undernourished subjects. Milbank Mem. Fund Quart., *28*:114-126, 1950.

Marcus, I. M., et al.: An Interdisciplinary Approach to Accident Patterns in Children. Monogr. Soc. Res. Child Development, Series 76, *25*(2), 1960.

Maresh, M. M.: Bone, muscle and fat measurements. Longitudinal measurements of the bone, muscle and fat widths from roentgenograms of the extremities during the first six years of life. Pediatrics, *28*:971-984, 1961.

Marks, J. B.: Interests and leadership among adolescents. J. Genet. Psychol., *91*:163-172, 1957.

Marshall, H. R.: Relations between home experiences and children's use of language in play interactions with peers. Psychol. Monogr., *75*(5), 1961.

Marshall, H. R., and Magruder, L.: Relations between parent money education practices and children's knowledge and use of money. Child Development, *31*:253-284, 1960.

Marshall, H. R., and McCandless, B. R.: Relationship between dependence on adults and social acceptance by peers. Child Development, *28*:413-419, 1957.

Martin, K. L.: Handedness: a review of the literature on the history, development and research of laterality preference. J. Educ. Research, *45*:527-533, 1952.

Martin, P. C., and Vincent, E. L.: Human Development: Biological. New York, The Ronald Press Co., 1960.

Martin, W. E.: Rediscovering the mind of the child: a significant trend in research in child development. Merrill-Palmer Quart., *6*(4):67-76, 1960.

Martin, W. E.: Family Life Experiences and Their Influence upon the Behavioral Development of Children. Lafayette, Ind., Agricultural Experiment Station, Purdue University, 1961.

Martin, W. E., and Stendler, C. B.: Child Behavior and Development. Rev. ed. New York, Harcourt, Brace and Co., 1959,a.

Martin, W. E., and Stendler, C. B.: Readings in Child Development. Rev. ed. New York, Harcourt, Brace and Co., 1959,b.

Martsinovskaia, B. N.: Interplay of dactyl and articulatory kinesthesia in deaf children. Vop. Psikhol., *(1)*:101-112, 1962.

Masland, R. L., Sarason, S. R., and Gladwin, T.: Mental Subnormality. New York, Basic Books, Inc., 1958.

Maslow, A. H.: Motivation and Personality. New York, Harper & Bros., 1954.

Masserman, J. H.: Principles of Dynamic Psychiatry. Philadelphia, W. B. Saunders Co., 1961.

Massler, M., and Suher, T.: Calculation of "normal" weight in children (by means of nomograms based on selected anthropometric measurements). Child Development, *22*:75-94, 1951.

Mastand, R. L., Sarason, S. B., and Gladwin, T.: Mental Subnormality. New York, Basic Books, Inc., 1958.

Mathews, C. G., and Levy, L. H.: Response sets and manifest anxiety scores in a retarded population. Child Development, *32*:577-584, 1961.

Mathews, E.: The Marriage-Career Conflict in the Career Development of Girls and Young Women. Thesis, Graduate School of Education, Harvard University, 1960.

Matiushkin, A. M.: An investigation of psychological laws of the process of analysis. Vop. Psikhol., *3*:45-56, 1960.

Matkou, A. J.: Impression formation as a function of adjustment. Psychol. Monogr., General & Applied, *77*(5): No. 568, 1963.

Matza, D., and Sykes, G. M.: Juvenile delinquency and subterranean values. Am. Sociol. Rev., *26*:712-719, 1961.

Maw, W. H.: Children's curiosity as an aspect of reading comprehension. Reading Teacher, *15*:236-240, 1962.

Maw, W. H., and Maw, E. W.: Information recognition by children with high and low curiosity. Educ. Res. Bull., *40*:197-201, 1961.

Mead, M.: Sex and Temperament in Three Primitive Societies. New York, William Morrow & Co., Inc., 1935.

Mead, M.: New Lives for Old. New York, William Morrow & Co., Inc., 1956.

Mead, M.: Marrying in haste in college. Forum, *3*(2), Spring, 1960.

Mead, M.: The changing American family. Children, *10*(5):173-174, 1963.

Mead, M., and Wolfenstein, M. (ed.): Childhood in Contemporary Cultures. Chicago, Chicago University Press, 1955.

Medical Research Council: The Hazards to Man of Nuclear and Allied Radiations. London, Her Majesty's Stationery Office, 1956.

Medinnus, G. R.: Q-Sort descriptions of five-year-old children by their parents. Child Development, *32*:473-489, 1961.

Medinnus, G. R.: An examination of social correlates of sociometric status in a first grade group. J. Genet. Psychol., *101*:3-13, 1962,a.

Medinnus, G. R.: Objective responsibility in children: a comparison with the Piaget data. J. Genet. Psychol., *101*:127-133, 1962,b.

Mehler, J., and Miller, G. A.: Retroactive interference in the recall of simple sentences. Brit. J. Psychol., *55*(3):295-301, 1964.

Mehlman, B., Volio, A. M., Jamieson, B. B., and Gligor, A. M.: Childrearing practices in Kent, Ohio. Child Development, *33*:391-401, 1962.

Meier, E. G.: Independent adoptions—ten years later. Children, *10*(6):230-232, 1963.

Meisner, W. W.: Comparison of anxiety patterns in adolescent boys: 1939-1950. J. Genet. Psychol., *99*:323-329, 1961,a.

Meisner, W. W.: Some indications of sources of anxiety in adolescent boys. J. Genet. Psychol., *99*:65-73, 1961,b.

Mellanby, Sir Edward: A Story of Nutritional Research. The Abraham Flexner Lecture Series Number Nine. Baltimore, The Williams & Wilkins Co., 1950.

Mellanby, M., et al.: Teeth of 5-year-old London school children (1955) with a comparison of results obtained from 1929 to 1955. Brit. Med. J., *2*:318-327, 1957.

Members of the Department of Experimental Medicine, Cambridge, and associated workers: Studies of Under-nutrition, Wuppertal, 1946-1949. Medical Research Council Special Report Series No. 275. London, His Majesty's Stationery Office, 1951.

Menyuk, P.: Syntactic structures in the language of children. Child Development, *34*:407-422, 1963.

Meredith, H. V.: Relation between socio-economic status and body size in boys seven to ten years of age. Am. J. Dis. Child., *82*:702-709, 1951.

Meredith, H. V.: North American Negro infant: Size at birth and during the first post-natal year. Hum. Biol., *24*:290-308, 1952.

Meredith, H. V.: Concurrent fat loss and gain: Addendum. Am. J. Phys. Anthropol., *15*:157-158, 1957.

Meredith, H. V., and Culp, S. S.: Body form in childhood. Ratios quantitatively describing four slender-to-stocky continua on boys four to eight years of age. Child Development, *22*:4-14, 1951.

Meredith, H. V., and Meredith, E. M.: The body size and form of present-day white elementary children residing in west-central Oregon. Child Development, *24*:83-102, 1953.

Meredith, H. V., and Sherbina, P. R.: Body form in childhood: Ratios quantitatively describing three slender-to-stocky continua on girls four to eight years of age. Child Development, *22*:276-283, 1951.

Merrill, F. E., and Eldredge, H. W.: Culture and Society. New York, Prentice-Hall, Inc., 1952.

Merriman, J. B.: Relationship of personality traits to motor ability. Res. Quart. AAHPER, *31*:163-173, 1960.

Meyer, A.: Television, radio, films: Barrier and challenge. Childhood Educ., Sept., 1957.

Meyers, E. S. A.: Height-weight survey of New South Wales school children. Med. J. Australia, *1*:435-453, 1956.

Meyerson, L.: A Psychology of impaired hearing. *In* Cruickshank, W. M. (ed.): Psychology of Exceptional Children and Youth. Englewood Cliffs, N. J., Prentice-Hall, Inc., 1955.

Michal-Smith, H. (ed.): Management of the Handicapped Child. Diagnosis, Treatment and Rehabilitation. New York, Grune & Stratton, Inc., 1957.

Miles, R. C.: Effect of food deprivation on manipulatory reactions in cats. J. Comp. & Physiol. Psychol., *55*(3):358-362, 1962.

Milham, S., Jr.: Underreporting of incidence of cleft lip and palate. Am. J. Dis. Child., *106*:185-188, 1963.

Millard, C. V.: Child Growth and Development in the Elementary School Years. Rev. ed. Boston, D. C. Heath & Co., 1958.

Millard, C. V., and Rothney, J. W. M.: The Elementary School Child: A Book of Case Studies. New York, Dryden Press, 1957.

Miller, D. R.: Motivation and affect. *In* Mussen, P. (ed.): Handbook of Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960, Chapter 17.

Miller, D. R., and Swanson, G. E.: The Changing American Parent. New York, John Wiley & Sons, Inc., 1958.

Miller, D. R., and Swanson, G. E.: Inner Conflict and Defense. New York, Henry Holt & Co., Inc., 1960.

Miller, G. A.: Language and Communication. New York, McGraw-Hill Book Co., Inc., 1951.

Miller, H., and Baruch, D. W.: A study of hostility in allergic children. Am. J. Orthopsychiat., *20*:506-519, 1950.

Miller, H. C., and Calkuis, L. A.: Neonatal respiratory morbidity. Am. J. Dis. Child., *101*:29-33, 1961.

Miller, R. V.: Social status and socioempathic differences among mentally superior, mentally typical and mentally retarded children. Except. Child, *23*:114-119, 1956.

Miller, R. W.: Safeguarding children from radiation risks. Children, *3*:203-207, 1956.

Miller, W. B.: Lower class culture as a generating milieu of gang delinquency. J. Soc. Issues, *14*(3):5-19, 1958.

Miller, W. B., Geertz, H., and Cutter, H. S. G.: Aggression in a boys' street-corner group. Psychiatry, *24*:283-298, 1961.

Mills, J.: Changes in moral attitudes following temptation. J. Personality, *26*:517-531, 1958.

Ministry of Health (London): Standards of Normal Weight in Infancy. Rep. Pub. Health & Med. Subjects, No. 99, 1959.

Ministry of Information (on Behalf of the Board of Education; published by His Majesty's Stationery Office, London, 1941): The Schools in Wartime. 60 Rockefeller Plaza, New York, The British Library of Information.

Mira: Published in India, January-March, 1962.

Mischel, W.: Preference for delayed reinforcement and social responsibility. J. Abnorm. & Social Psychol., *62*:1-7, 1961.

Mitchell, A. G.: The growth and motor development of children with cerebral palsy. Cerebral Palsy Rev., *22*(4):3-4; 17-18, 1961.

Mitchell, D. F.: The mechanism of dental caries. J. Am. Dent. A., *52*:14-18, 1956.

Mizushima, K., and Jenkins, R. L.: Treatment needs corresponding to varieties of delinquents. Internat. J. Soc. Psychiat., *8*:91-103, 1962.

Mogar, M.: Children's causal reasoning about natural phenomena. Child Development, *31*(No. 1): 59-60, 1960.

Mohr, D. R.: The contributions of physical activity to skill learning. Res. Quart. AAHPER, *31*:321-350, 1960.

Mohr, D. R., and Barrett, M. E.: Effect of knowledge of mechanical principles in learning to perform immediate swimming skills. Res. Quart. AAHPER, *33*:574-580, 1962.

Mohr, G. J., and Despres, M. A.: The Stormy Decade: Adolescence. New York, Random House, Inc., 1958.

Montagu, M. F. A.: The Reproductive Development of the Female. With special reference to the period of adolescent sterility. New York, The Julian Press, Inc., 1957.

Montagu, M. F. A.: Prenatal Influences. Springfield, Ill., Charles C Thomas, 1962.

Montesano, N., and Geist, H.: Differences in occupational choice between ninth and twelfth grade boys. Personnel & Guidance J., *XLIII*(2):150-154, 1964.

Moore, B. M., and Holtzman, W. H.: Subcultural Variations in Youth Attitudes and Concerns Based on The Texas Cooperative Youth Study, 1962.

More, D. M.: Developmental Concordance and Discordance During Puberty and Early Adolescence. Monogr. Soc. Res. Child Development, *18*(1). Lafayette, Ind., Child Development Publications, 1955.

Morgan, C.: Social background and high school student marriages before and after World War II. Marriage & Family Living, *25*:481-483, 1963.

Morland, J. K.: Racial recognition by nursery school children in Lynchburg, Va. Social Forces, *37*: 132-137, 1958.

Morland, J. K.: Racial acceptance and preference of nursery school children in a Southern city. Merrill-Palmer Quart., *8*(4):271-280, 1962.

Morley, M. E.: The Development and Disorders of Speech in Childhood. Baltimore, The Williams & Wilkins Co., 1957.

Morris, J. F.: Symposium: The development of moral values in children. II. The development of adolescent value-judgments. Brit. J. Educ. Psychol., *28*:1-14, 1958.

Morrisett, L. N.: Discussion of Kendler's (1963) article on mediating processes in children. *In* Basic Cognitive Processes in Children. Monogr. Soc. Res. Child Development, Series 86, *28*(2):48-52, 1963.

Morrow, W. R.: Family relations of bright high-achieving and under-achieving high school boys. Child Development, *32*:501-510, 1961.

Morrow, W. R., and Wilson, R. C.: The self-reported personal and social adjustment of bright high-achieving and under-achieving high school boys. J. Child Psychol. & Psychiat., *2*:203-209, 1961.

Mosher, D. L., and Scodel, A.: Relationships between ethnocentrism in children and ethnocentrism and authoritarian rearing practices of their mothers. Child Development, *31*:369-376, 1960.

Moss, H. A., and Kagan, J.: Stability of achievement and recognition seeking behaviors from early childhood through adulthood. J. Abnorm. & Social Psychol., *62*:504-513, 1961.

Moustakas, C. E.: Children in Play Therapy: A Key to Understanding Normal and Disturbed Emotions. New York, McGraw-Hill Book Co., Inc., 1953.

Moustakas, C. E.: The Teacher and the Child: Personal Interaction in the Classroom. New York, McGraw-Hill Book Co., Inc., 1956.

Mowrer, O. H.: Cognitive dissonance or counterconditioning?—A reappraisal of certain behavior "paradoxes." The Psychol. Rec., *133*:197-211, 1963.

Moyers, R. E., and Hemrend, B.: The Growth of the Cranio-Facial Skeleton. Toronto, privately printed, 1953.

Mukherji, P. S., and Seugupta, S. K.: Menarche among the school girls in urban West Bengal. Indian J. Child Health, *11*:119-125, 1962.

Murata, K.: The development of verbal behavior: early developmental progress of the linguistic forms and functions of request. Jap. J. Educ. Psychol., *9*:220-229, 1961.

Murphy, G.: Human Potentials. New York, Basic Books, Inc., 1958.

Murphy, G., and Murphy, L. B.: The child as potential. *In* Ginsberg, E. (ed.): The Nation's Children. Vol. 2. Development and Education. Published for the Golden Anniversary White House Conference on Children and Youth. New York, Columbia University Press, 1960.

Murphy, L. B., et al.: Personality in Young Children. Vol. I. Methods for the Study of Personality in Young Children. Vol. II. Colin—A Normal Child. New York, Basic Books, Inc., 1956.

Murphy, L. B., et al.: The Widening World of Childhood: Paths Toward Mastery. New York, Basic Books, Inc., 1962.

Mussen, P. H.: Child-rearing antecedents of masculine identification in kindergarten boys. Child Development, *31*:89-100, 1960.

Mussen, P. H., and Conger, J. J.: Child Development and Personality. New York, Harper & Bros., 1956.

Mussen, P. H., and Distler, L.: Masculinity, identification, and father-son relationships. J. Abnorm. & Social Psychol., *59*:350-356, 1959.

Mussen, P. H., and Distler, L.: Child-rearing antecedents of masculine identification in kindergarten boys. Child Development, *31*:89-100, 1960.

Mussen, P. H., and Jones, M. C.: Self-conceptions, motivation, and interpersonal attitudes of late- and early-maturing boys. Child Development, *28*:243-256, 1957.

Mussen, P. H., and Jones, M. C.: The behavior-inferred motivations of late- and early-maturing boys. Child Development, *29*:61-67, 1958,a.

Mussen, P. H., and Kagan, J. J.: Group conformity and perceptions of parents. Child Development, *29*:58-60, 1958,b.

Mussen, P. H., and Rutherford, E.: Effects of aggressive cartoons on children's aggressive play. J. Abnorm. & Social Psychol., *62*:461-465, 1961.

Mussen, P. H., and Rutherford, E.: Parent-child relations and parental personality in relation to young children's sex-role preferences. Child Development, *34*:589-607, 1963.

Muuss, R. E.: The effects of a one- and two-year causal-learning program. J. Pers., *28*:479-491, 1960,a.

Muuss, R. E.: Mental health implications of a preventive psychiatry program in the light of research findings. Marriage & Family Living, *22*:150-156, 1960,b.

Muuss, R. E.: The relationship between "causal" orientation, anxiety, and insecurity in elementary school children. J. Educ. Psychol., *51*:122-129, 1960,c.

Myers, C. E., Orpet, R. E., Attwell, A. A., and Dingman, H. F.: Primary Abilities at Mental Age Six. Monogr. Soc. Res. Child Development, *27*(1):82, 1962.

Nakamura, C. Y.: The relationship between children's expressions of hostility and methods of discipline exercised by dominant overprotective parents. Child Development, *30*:109-117, 1959.

Nakano, Y., Katada, A., Hayashi, K., and Ioa, N.: Language and communication in the mentally retarded: a study on the successive reproduction. Jap. J. Child Psychiat., *1*:170-177, 1960.

Nanda, R. S.: Eruption of human teeth. Am. J. Orthodont., *46*:363-378, 1960.

Nass, M. L.: The effects of three variables in children's

concepts of physical causality. J. Abnorm. & Social Psychol., *53*:191-196, 1956.

National Academy of Sciences-National Research Council: The Biological Effect of Atomic Radiation: Summary Reports from a Study by the Academy. Washington, D. C., National Academy of Sciences-National Research Council, 1956.

National Academy of Sciences-National Research Council: Recommended Dietary Allowances. Rev. Publ. Washington, D.C., National Academy of Sciences-National Research Council, 1964.

National Safety Council: Safety Education. May, 1957.

National Society for the Prevention of Blindness: Classroom Lighting. Publ. 498. 16 East 40th Street, New York, National Society for Prevention of Blindness, 1950.

National Society for the Prevention of Blindness: An Eye Health Program for Schools. Publ. 141. 16 East 40th Street, New York. National Society for Prevention of Blindness, 1951.

National Society for the Study of Education: The Impact and Improvement of School Testing Programs: The Sixty-Second Yearbook of the Nat'l. Soc. Stud. Educ. Part II. Chicago, University of Chicago Press, 1963.

Neidt, C. O., and French, F. L.: Reaction of high school students to television teachers. J. Genet. Psychol., *100*:337-344, 1962.

Neiser, E.: The Eldest Child. New York, Harper & Bros., 1957.

Nelson, T. M.: A study comparing visual and visual-motor perceptions of unimpaired, defective and spastic cerebral palsied children. J. Genet. Psychol., *101*:299-332, 1962.

Nelson, T. M., and Bartley, S. H.: Various factors playing a role in children's responses to flat copy. J. Genet. Psychol., *100*:289-308, 1962.

Nemes, L.: The phases of mental development and thinking in Piaget's works. Pszichol. Tanulmanyok, *1*:27-37, 1958.

Nemir, A.: The School Health Program. Philadelphia, W. B. Saunders Co., 1959.

Neuhaus, E. C.: A personality study of asthmatic and cardiac children. Psychosom. Med., *20*:181-186, 1958.

Neuhaus, M.: Measuring the non-verbal intelligence of gifted elementary-school children. Except. Child, *28*:271-273, 1962.

Neumeyer, M. H.: Juvenile Delinquency in Modern Society. 3rd ed. Princeton, N. J., D Van Nostrand, Inc., 1961.

Newland, T. E.: Language development of the mentally retarded child. *In* Wood, N.E. (ed.): Language Development and Language Disorders: A Compendium of Lectures. Monogr. Soc. Res. Child Development, Serial No. 77, *25*(3):71-87, 1960.

Newman, R. W.: Age changes in body build. Am. J. Phys. Anthropol., *10*:75-92, 1952.

New York State Department of Social Welfare: Deterrents to Early Prenatal Care and Social Services Among Women Pregnant Out of Wedlock, 1960.

Nichols, R. C., and Holland, J. L.: Prediction of the First Year College Performance of High Aptitude Students. Psychol. Monogr., General & Applied, No. 570, 1963.

Nicolson, A. B., and Hanley, C.: Indices of physiological maturity. Derivations and interrelationships. Child Development, *24*:3-38, 1953.

Nickols, J. E., Jr.: Changes in self during the high school years: a study of mental health using paper and pencil tests. J. Educ. Res., *56*:403-409, 1963.

Nicola, P., and Ansaldi, N.: Growth of the immature child from birth to the age of four. Panminerva Medica, *3*:109-117, 1961.

Noro, S.: Development of the child's conception of number. Jap. J. Educ. Psychol., 9:230-239, 1961.

Norris, A. S.: Prenatal factors in intellectual and emotional development. J.A.M.A., *172*:413-416, 1960.

Norris, M., Spaulding, P. J., and Brodie, F. H.: Blindness in Children. Chicago, University of Chicago Press, 1957.

Novack, C. R.: The appearance of ossification centers and the fusion of bones. Am. J. Phys. Anthropol., *12*:63-69, 1954.

Nye, F. I.: Family Relationships and Delinquent Behavior. New York, John Wiley & Sons, Inc., 1958.

O'Brien, C. O.: The measurement of handwriting. School and Soc., *86*:153, 1958.

Ohlsen, M. M.: Interpretation of Test Scores: Chapter XII in The 1963 Yearbook of the National Society for the Study of Education: The Impact and Improvement of School Test Programs, 1964.

Ojemann, R. E. (ed.): Recent Research on Creative Approaches to Environmental Stress. (Proceedings of the Fourth Institute on Preventive Psychiatry.) Iowa City, Iowa, State University of Iowa, 1964.

Olson, W. C.: Psychological Foundations of the Curriculum. Paris, UNESCO, 1958.

Olson, W. C.: Child Development. 2nd ed. Boston, D. C. Heath & Co., 1959.

Orent-Keiles, E., and Hallman, L. F.: The Breakfast Meal in Relation to Blood-Sugar Values. U.S. Department of Agriculture Circular 827. Washington, D.C., U.S. Department of Agriculture, 1949.

Otterstaedt, H.: [Investigations concerning the play area of suburban children in a medium sized city.] Psychol. Rdsch., *13*:275-287, 1962.

Ounsted, C.: Genetic and social aspects of the epilepsies of childhood. Eugen. Rev., *47*:35-51, 1955.

Ourth, L., and Brown, K. B.: Inadequate mothering and disturbance in the neonatal period. Child Development, *32*:287-295, 1961.

Page, I. H.: Serotonin. Scient. Am., December, 1957.

Page, I. H.: Serotonin (5-hydroxytryptamine): The last four years. Physiol. Rev., *38*:277-335, 1958.

Papousek, H.: A physiological review of early ontogenesis of so-called voluntary movements. *In* Sobotka, P. (ed.): Functional and metabolic development of the central nervous system. Prague, State Publ., 1961.

Parsons, A.: Translators' Introduction: A Guide for Psychologists. *In* Inhelder, B., and Piaget, J.: The Growth of Logical Thinking from Childhood to Adolescence. New York, Basic Books, Inc., 1958.

Parsons, T.: Family Structure and the Socialization of the Child. *In* Parsons, T., Bales, R. F., and Associates: Family, Socialization, and Interaction Process. Chicago, The Free Press of Glencoe, 1955.

Parsons, T.: Youth in the context of American Society. Daedulus, *91*:97-123, 1962.

Parsons, T., Bales, R. F., and Shils, E. A.: Working Papers of the Theory of Action. Chicago, The Free Press of Glencoe, 1953.

Patel, A. S., and Gordon, J. E.: Some personal and situational determinants of yielding to influence. J. Abnorm. & Social Psychol., *61*:411-418, 1960.

Patten, B. M.: Varying developmental mechanisms in tetratology. Pediat., *19*:734-748, 1957.

Paulett, J. D., and Tuckman, E.: Onset enuresis. Brit. Med. J., *2*:1266-1268, 1958.

Payne, M. C., Jr.: Color as an independent variable in

perceptual research. Psychol. Bull., *61*(3):199-208, 1964.

Paynter, K. J., and Grainger, R. M.: Influence of nutrition and genetics on morphology and caries susceptibility. J.A.M.A., *177*:306-307, 1961.

Pease, D., and Gardner, D. B.: Research on the effects of noncontinuous mothering. Child Development, *29*:142-148, 1958.

Peck, R. F., and Havighurst, R. J.: The Psychology of Character Development. New York, John Wiley & Sons, Inc., 1960.

Peck, R. F., and Havighurst, R. J.: Child Development and Personality. 2nd ed. New York, John Wiley & Sons, Inc., 1963.

Peckard, P. M.: I Could a Tale Unfold: Violence, Horror and Sensationalism in Stories for Children. New York, Humanities Press, Inc., 1961.

Peckos, P. S., and Heald, F. P.: Nutrition of Adolescents. Children, *11*(1):27-30, 1964.

Peffley, G. E., and Muhler, J. C.: The effect of a commercial stannous fluoride dentifrice under controlled brushing habits on dental caries incidence in children: preliminary report. J. Dent. Res., *39*:871-874, 1960.

Peiper, A.: Cerebral Function in Infancy and Childhood. New York, Consultants Bureau Enterprises, Inc., 1964.

Peller, S., and Pick, P.: Leukemia and other malignancies in physicians. Am. J. M. Sc., *224*:154-159, 1952.

Penbharkkul, S., and Karelitz, S.: Lacrimation in the neonatal and early infancy period of premature and full-term infants. J. Pediat., *61*:859-863, 1962.

Pendleton, R. C., Lloyd, R. D., and Mays, C. W.: Iodine-131 in Utah during July and August, 1962. Science, *141*:640-642, 1963.

Penneau, S. R.: Changes in Intelligence Quotient from Infancy to Maturity. Boston, Houghton Mifflin Company, 1961.

Perkins, H. V.: Factors influencing change in children's self-concepts. Child Development, *29*:221-229, 1958,a.

Perkins, H. V.: Teachers' and peers' perceptions of children's self-concepts. Child Development, *29*:203-220, 1958,b.

Perry, J. B., Jr.: The mother substitutes of employed mothers: an exploratory inquiry. Marriage & Family Living, *23*:362-367, 1961.

Perry, J. B., Jr., and Pfuhl, E. H., Jr.: Adjustment of children in "solo" and "remarriage" homes. Marriage & Family Living, *25*:221-223, 1963.

Perry, N.: Teaching the Mentally Retarded Child. New York, Columbia University Press, 1960.

Peterman, M. G.: Behavior in epileptic children. J. Pediat., *42*:758-769, 1953.

Peterson, D. R.: Behavior problems of middle childhood. J. Consult. Psychol., *25*:205-209, 1961.

Peterson, D. R., et al.: Parental attitudes and child adjustment. Child Development, *30*:119-130, 1959.

Peterson, D. R., Becker, W. C., Helmer, W. C., Shoemaker, D. J., and Quay, H. C.: Parental attitudes and child adjustment. Child Development, *30*:119-130, 1954.

Peterson, D. R., Becker, W. C., Shoemaker, D. J., Luria, S., and Hellmer, L. A.: Child behavior problems and parental attitudes. Child Development, *32*:151-152, 1961.

Peterson, D. R., Quay, H. C., and Tiffany, T. L.: Personality factors related to juvenile delinquency. Child Development, *32*:355-372, 1961.

Pett, L. B.: Values from tripling the milk used in an institution. Fed. Proc., *12*:426, 1953.

Pfautz, H. W.: The functions of day-care for disturbed adolescents. Ment. Hyg., *46*:223-229, 1962.

Phelps, H. R., and Horrocks, J. E.: Factors influencing informal groups of adolescents. Child Development, *29*:69-86, 1958.

Phelps, W. M., Kiphuth, R. J. H., and Goff, C. W.: The Diagnosis and Treatment of Postural Defects. 2nd ed. Springfield, Ill., Charles C Thomas, 1956.

Phillips, B. M.: Age changes in accuracy of self-perceptions. Child Development, *34*:1041-1046, 1963.

Phillips, B. N., et al.: Studies on anxiety: I. Anxiety and performance on psychometric tests varying in complexity. Child Development, *30*:253-259, 1959.

Piaget, J.: The Moral Judgment of the Child. Chicago, The Free Press of Glencoe, 1948.

Piaget, J.: Language and Thought of the Child. New York, Humanities Press, Inc., 1951.

Piaget, J.: Judgment and Reasoning in the Child. New York, Humanities Press, Inc., 1952,a.

Piaget, J.: Play, Dreams and Imitation in Childhood. New York, W. W. Norton & Co., Inc., 1952,b.

Piaget, J.: The Child's Conception of Physical Causality. New York, Humanities Press, Inc., 1952,c.

Piaget, J.:Remarks about himself. *In* Tanner, J. M., and Inhelder, B. (ed.): Discussions on Child Development. (Proceedings of the First Meeting of the World Health Organization Study Group on the Psychological Development of the Child.) New York, International Universities Press, pp. 31-33, 1953,a.

Piaget, J.: The Origins of Intelligence in Children. New York, International Universities Press, Inc., 1953,b.

Piaget, J.: The Construction of Reality in the Child. New York, Basic Books, Inc., 1954,a.

Piaget, J.: Language and thought from the genetic point of view. Acta Psych., *10*:51-60, 1954,b.

Piaget, J.: The genetic approach to the psychology of thought. J. Educ. Psychol., *52*:275-281, 1961.

Pierce, C. M., Whitman, R. M., Maas, J. W., and Gay, M. L.: Enuresis and dreaming. Am. Arch. Gen. Psychiat., *4*:166-170, 1961.

Pincus, G., and Hoagland, H.: Adrenal cortical responses to stress in normal men and in those with personality disorders. Am. J. Psychiat., *106*:641-659, 1950.

Pinneau, S. R.: The infantile disorders of hospitalism and anaclitic depression. Psychol. Bull., *52*:429-452, 1955.

Pinneau, S. R.: Changes in Intelligence Quotient–Infancy to Maturity. Boston, Houghton Mifflin Co., 1961.

Plank, E. M.: Working with Children in Hospitals. Cleveland, Western Reserve University Press, 1962.

Plummer, G.: Anomalies occurring in children exposed in utero to the atomic bomb in Hiroshima. Pediat., *10*:687-693, 1952.

Pollak, O.: Some challenges to the American family. Children, *11*(1):19-20, 1964.

Population Profile. Population Reference Bureau, Inc., 1507 M Street, N.W., Washington 5, D.C., June 3, 1962; June 3, 1963.

Powell, M., and Bergem, J.: An investigation of the differences between tenth, eleventh, and twelfth

grade "conforming" and "non-conforming" boys. J. Educ. Res., *56*:184-190, 1962.
Powell, M., and Bloom, V. Development of and reasons for vocational choices of adolescents through the high-school years. J. Educ. Res., *56*:126-133, 1962.
Powers, E., and Witmer, H.: An Experiment in the Prevention of Delinquency. New York, Columbia University Press, 1951.
Pratt, K. C.: The neonate. *In* Carmichael, L. (ed.): Manual of Child Psychology. 2nd ed. New York, John Wiley & Sons, Inc., 1954.
Prescott, D. A.: The Child in the Educative Process. New York, McGraw-Hill Book Co., Inc., 1957.
Price, D. E.: Radiation as a public health problem. Pub. Health Rep., *73*:197-202, 1958.
Pringle, M. L., and Bossio, V.: A study of deprived children. I. Intellectual, emotional, and social development. Vita Humana, *1*:65-92, 1958.
Pringle, M. L., and Bossio, V.: Early prolonged separation and emotional maladjustment. J. Child Psychol. & Psychiat., *1*:37-48, 1960.
Prins, T. D.: Motor and auditory abilities in different groups of children with articulatory deviations. J. Speech & Hearing Res., *5*:161-168, 1962.
Pritchard, R., and Rosensweig, S.: The effects of war stress upon childhood and youth. J. Abnorm. & Social Psychol., *37*:329-344, 1942.
Prokina, N. F.: Development of stable forms of behavior in school children of the first grade. Vop. Psikhol., No. 3, 64-68, 1960.
Provence, S., and Lipton, R. C.: Infants in Institutions: A Comparison of Their Development with Family-reared Infants during the First Year of Life. New York, International Universities Press, 1963.
Prugh, D. G., et al.: A study of the emotional reactions of children and families to hospitalization and illness. Am. J. Orthopsychiat., *23*:70-106, 1953.
Pryer, M. W., and Cassel, R. H.: The Children's Manifest Anxiety Scale reliability with aments. Am. J. Ment. Deficiency, *66*:860, 1962.
Przetaeznikowa, M.: Mental development in the first years of life in three kinds of educational environment. Psychol. Wych., *3*:32-46, 1960.
Punke, H. H.: The education of gifted children. School and Soc., *85*:329-331, 1957.
Putnam, V., Isco, I., and Young, R. K.: Verbal learning in the deaf. J. Comp. & Physiol. Psychol., *55*:843-846, 1962.
Putney, S., and Middleton, R.: Rebellion, conformity, and parental religious ideologies. Sociometry, June, 1961.
Pyle, S. I., and Hoerr, N. L.: Radiographic Atlas of Skeletal Development of the Knee. Springfield, Ill., Charles C Thomas, 1955.
Pyle, S. I., et al.: Substitute for skeletal age (Todd) for clinical use, red graph method. J. Pediat., *32*: 125-136, 1948.
Quinn, R. W., et al.: An environmental and sociological study of rheumatic heart disease. Am. J. Pub. Health, *40*:1285-1295, 1950.
Rabinovitch, R. D., and Fischhoff, J.: Feeding children to meet their emotional needs. J. Am. Dietet. A., *28*:614-621, 1952.
Rafferty, F. T., and Stein, E. S.: A study of the relationship of early menarche to ego development. Am. J. Orthopsychiat., *28*:170-179, 1958.
Raghviah, K. V., Rao, P. T., and Chandra, H.: Study of physiological maturity in premature newborns. Indian J. Child Health, *11*:424-430, 1962.
Ramsey, G. V.: Sexual growth of Negro and white boys. Hum. Biol., *22*:146-149, 1950.
Rapaport, D.: The structure of psychoanalytic theory: A systematizing attempt. *In* Koch, S. (ed.): Psychology: a Study of a Science. Vol. 3. New York, McGraw-Hill Book Co., Inc., 1959.
Ratner, S. C., Gawronski, J. J., and Rice, F. E.: The variable of concurrent action in the language of children: Effects of delayed speech feedback. Psychol. Rec., *14*:47-56, 1964.
Rau, L.: Parental antecedents of identification. Merrill Palmer Quart., *6*(2):77-82, 1960.
Rau, L.: Conscience and Indentification. *In* Sears, R. R., Alpert, J. J., and Rau, L. (ed.): Identification in Children. 1963.
Ray, C., Kirschvink, J. E., Waxman, S. H., and Kelley, V. C.: Studies of anabolic steroids: II. The effect of oxandrolone on height and skeletal maturation in mongoloid children. Am. J. Dis. Child., *106*:375-380, 1963.
Razan, G.: The observable unconscious and the inferable conscious in current Soviet psychophysiology: interoceptive conditioning, semantic conditioning and the orienting reflex. Psychol. Rev., *68*:81-147, 1961.
Read, K. H.: The Nursery School. 3rd ed. Philadelphia, W. B. Saunders Co., 1960.
Redl, F., and Wineman, D.: Controls from Within. Chicago, The Free Press of Glencoe, 1952.
Redl, F., and Wineman, D.: The Aggressive Child. 1. Children Who Hate. Chicago, The Free Press of Glencoe, 1957.
Reed, G. F., and Smith, A. C.: A further experimental investigation of the relative speeds of left and right handed writers. J. Genet. Psychol., *100*:275-288, 1962.
Reed, S. C.: Counseling in Medical Genetics. Philadelphia, W. B. Saunders Co., 1955.
Reichenberg-Hackett, W.: Practices, attitudes and values in nursery school education. Psychol. Rep., *10*:151-172, 1962.
Reichert, J. L.: Competitive athletics for pre-teen-age children. J.A.M.A., *166*:1701-1707, 1958.
Reik, T.: Ritual: Four Psychoanalytic Studies. (Trans. D. Bryan). New York, Grove Evergreen, 1962.
Reimann, L. C.: The Successful Camp. Ann Arbor, University of Michigan, 1958.
Reisen, A. H.: Receptor functions. *In* Mussen, P. (ed.): Handbook of Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960, Chapter 7.
Remmers, H. H., and Radler, D. H.: Teen-age attitudes. Scient. Month., *198*:6, 25-35, 1958.
Review: Stannous fluoride and tooth decay. Nutrition Rev., *14*:197-200, 1956.
Review: The regulation of thirst. Nutrition Rev., *16*: 302-304, 1958.
Review: Refractory rickets as a sex-linked congenital anomalie. Nutrition Rev., *18*:232-236, 1960.
Review: Nutrition, health and longevity. Nutrition Rev., *19*:305-306, 1961.
Reynolds, E. L.: The Distribution of Subcutaneous Fat in Childhood and Adolescence. Monogr. XV (2). Evanston, Ill., Society for Research in Child Development, Inc., 1952.
Reynolds, M. M.: Children from Seed to Sapling. 2nd ed. New York, McGraw-Hill Book Co., Inc., 1951.
Rheingold, H. L.: The modification of social respon-

siveness in institutional babies. Monogr. Soc. Res. Child Development, Series 63, *21*(2), 1956.

Rheingold, H. L.: The effect of environmental stimulation upon social and exploratory behavior in the human infant. *In* Foss, B. M. (ed.): Determinants of Infant Behavior. New York, John Wiley & Sons, Inc., 1962, pp. 145-171.

Ribble, M.: The Personality of the Young Child; An Introduction for Puzzled Parents, New York, Columbia University Press, 1955.

Rieber, M.: Shifts in response-reward intervals and its effect upon response speed. Psychol. Rep., *9*:393-398, 1961.

Rife, D. C.: Heredity and Handedness. Sci. Month., *73*:188-191, 1951.

Rimland, B.: Infantile Autism. New York, Appleton-Century-Crofts, Inc., 1964.

Ring, E. M., and Palermo, D. S.: Paired associate learning of retarded and normal children. Am. J. Ment. Deficiency, *66*:100-107, 1961.

Ringness, T. A.: Self concept of children of low, average, and high intelligence. Am. J. Ment. Deficiency, *65*:453-461, 1961.

Ringold, E. S.: Rearing children of good will. N. Y. Times Magazine, p. 61 ff., Sept. 22, 1963.

Riopelle, A. J., and Rogers, J. P.: Transfer of training to orthogonal dimensions. J. Exper. Psychol., *52*:367-370, 1956.

Ritchie, B. F.: A logical and experimental analysis of the laws of motivation. *In* Jones, M. R. (ed.): Nebraska symposium on motivation. Lincoln, University of Nebraska Press, 1954, pp. 121-176.

Roberts, H. E.: Factors affecting the academic underachievement of bright high-school students. J. Educ. Res., *56*:175-183, 1962.

Roberts, K. E., and Fleming, E. V.: Persistence and Change in Personality Patterns. Monogr. VIII (3). Washington, D.C., Society for Research in Child Development, National Research Council, 1943.

Roberts, K. E., and Schoelkopf, J. A.: Eating, sleeping, elimination: practices of group of two-and-one-half-year-old children. Am. J. Dis. Child., *82*:121-152, 1951.

Robertson, E. C., et al.: The effect of added thiamine on growth, vision and learning, using identical twins. J. Nutrition, *34*:691-700, 1947.

Robertson, J. (ed.): Hospitals and Children: A Parent's Eye View. London, Gollanez, 1962.

Robertson, J. (ed.): Hospitals and Children. New York, International Universities Press, 1963.

Robertson, W. O.: An investigation of material concerns by mail survey. Child Development, *32*:423-436, 1961.

Robinow, M., and Silverman, F. N.: Radiation hazard in the field of pediatrics. Pediat., *20*:921-940, 1957.

Robinson, H., and Allen, H. (ed.): The Underachiever in Reading. Chicago, Chicago University Press, 1962.

Rockefeller Report on Education: The Pursuit of Excellence: Education and the Future of America. New York, Doubleday & Co., Inc., 1958.

Roe, A., and Siegelman, M.: A Parent-Child Relations Questionnaire. Child Development, *34*:355-369, 1963.

Rogers, C. R.: The actualizing tendency in relation to "motives" and consciousness. *In* Jones, M. R. (ed.): Nebraska Symposium on Motivation. Lincoln, Nebraska University Press, 1963.

Rogers, M. E., Lilienfeld, A. M., and Pasamanick, B.: Prenatal and Paranatal Factors in the Development of Childhood Behavior Disorders. Baltimore, Md., The Johns Hopkins University School of Hygiene and Public Health, 1955.

Rohrer, J. H., and Edmonson, M. S.: The Eighth Generation. New York, Harper & Bros., 1960.

Rose, W. C.: Amino acid requirements of man. Fed. Proc., *8*:546-552, 1949.

Rosen, B. C.: Family structure and achievement motivation. Am. Sociol. Rev., *26*:574-578, 1961.

Rosen, B. C.: Family structure and value transmission. Merrill-Palmer Quart., *10*(1): 59-76, 1964.

Rosenbaum, M. E.: Effect of direct and vicarious verbalization on retention. Child Development, *33*:103-110, 1962.

Rosenbaum, M. E., and DeCharms, R.: Direct and vicarious reduction of hostility. J. Abnorm. & Social Psychol., *59*:105-111, 1960.

Rosenberg, M. E.: Parental interest and children's self conceptions. Sociometry, *26*:35-49, 1963.

Rosenblith, J. F.: Learning by imitation in kindergarten children. Child Development, *30*:69-80, 1959.

Rosenblith, J. F.: Contributions of Piaget to developmental psychology: A symposium. Merrill-Palmer Quart., *9*(4):243-244, 1963.

Rosenblith, J. F., and Allinsmith, W. (ed.): The Causes of Behavior: Readings in Child Development and Educational Psychology. Boston, Allyn & Bacon, Inc., 1962.

Rosenblum, S., and Callahan, R. J.: The performance of high-grade retarded, emotionally disturbed children on the children's manifest anxiety scale and children's anxiety pictures. J. Clin. Psychol., *14*:272-275, 1958.

Rosenthal, H. L., Gilster, J. E., and Bird, J. T.: Strontium-90 content of deciduous human incisers. Science, *140*:176-177, 1963.

Ross, A. O.: The Exceptional Child in the Family. New York, Grune & Stratton, Inc., 1964.

Ross, L. J.: A summer camp for children with heart disease. J. Pediat., *43*:67-73, 1953.

Ross, R. T.: The mental growth of Mongoloid defectives. Am. J. Ment. Deficiency, *66*:736-738, 1962.

Rubner: Cited in MacLeod, G., and Taylor, C. M. (ed.): Rose's Foundations of Nutrition. 4th ed. New York, The Macmillan Co., 1944.

Rulbush, B. K.: Interfering and facilitating effects of test anxiety. J. Abnorm. & Social Psychol., *60*:205-211, 1960.

Rundle, A. T.: Etiological factors in mental retardation: I. Biochemical. Am. J. Ment. Deficiency, *67*:61-68, 1962,a.

Rundle, A. T.: Etiological factors in mental retardation: II. Endocrinological. Am. J. Ment. Deficiency, *67*:69-77, 1962,b.

Rusbach, H. W., Van Laar, F., and DeHaas, J. H.: [Age of menarche: a comparison of the status quo method and the method of recollected data.] T. Soc. Geneesk., 411-415, 1961.

Rushford, G., and Lowell, E. L.: Use of hearing aids by young children. J. Speech & Hearing Res., *3*:354-360, 1960.

Russell, A. L., and Elvove, E.: Domestic water and dental caries. VII. A study of the fluoride-dental caries relationship in an adult population. Pub. Health Rep., *66*:1389-1401, 1951.

Russell, D. H.: Interrelationship of the language arts and personality. *In* Child Development and the

Language Arts. Chicago, Nat'l. Council Teachers of English, 1953.
Russell, I. L.: Behavior problems of children from broken and intact homes. J. Educ. Sociol., *31*:124-129, 1957.
Rutter, M., Korn, S., and Birch, H. C.: Genetic and environmental factors in the development of "primary reaction patterns." Brit. J. Social & Clin. Psychol., *2*:161-173, 1963.
Salmi, T., Hanninen, P., and Peltonen, T.: University of Turku, Finland). The electrocardiagrams of premature infants in the first month of life. Biol. Neonat., *2*:149-158, 1960.
Sampson, E. E.: Birth order, need achievement and conformity. J. Abnorm. Psychol., *62*:356-363, 1961.
Sampson, O. C.: Reading skill at eight years in relation to speech and other factors: a longitudinal study. Brit. J. Educ. Psychol., *32*:12-17, 1962.
Sandberg, A. A., Crosswhite, L. H., and Gordy, E.: Trisomy of a large chromosome: association with mental retardation. J.A.M.A., *174*:221-225, 1960.
Sanford, N.: The dynamics of identification. Psychol. Rev., *62*:106-117, 1955.
Sarason, S. B., et al.: A test anxiety scale for children. Child Development, *29*:105-113, 1958,a.
Sarason, S. B., *et al.*: Rorschach behavior and performance of high anxious and low anxious children. Child Development, *29*:277-285, 1958,b.
Sarason, S. B., Davidson, K. S., et al.: Anxiety in Elementary School Children. New York, John Wiley & Sons, Inc., 1960.
Sarnoff, I.: Personality Dynamics and Development. New York, John Wiley & Sons, Inc., 1962.
Sarvis, M. A., and Garcia, B.: Etiological variables in autism. Psychiatry, *24*:307-317, 1961.
Sawa, H.: An analysis of identical twins' intelligence. Jap. J. Educ. Psychol., *4*:199-202, 1957.
Scarpitti, F. R., Murray, E., Dinitz, S., and Rickless, W. C.: The "good" boy in a high delinquency area: four years later. Am. Sociol. Rev., *25*:555-558, 1960.
Schachter, S.: The Psychology of Affiliation. Stanford, Calif., Stanford University Press, 1959.
Schaefer, E. S., and Bayley, N.: Material behavior, child behavior and their interrelations from infancy through adolescence. Monogr. Soc. Res. Child Development, Series 87, *28*(3), 1963.
Schaefer, E. S., and Bell, R. O.: Development of a parental attitude research instrument. Child Development, *29*:339-354, 1958.
Schaller, W. E.: Health needs and interests as a basis for selecting health content in secondary schools. Res. Quart. AAHPER, *31*:512-522, 1960.
Scheffer, H. R., and Callender, N. M.: Psychologic effects of hospitalization in infancy. Pediatrics, *24*:528-539, 1959.
Schenk-Dansinger, C.: Social difficulties of children who were deprived of maternal care in early childhood. Vita Humana, *4*:229-240, 1961.
Schlesinger, E. R.: Newburgh-Kingston caries-fluoride study. XIII. Pediatric findings after ten years. J. Am. Dent. A., *52*:296-306, 1956.
Schmuck, R.: Sex of sibling, birth order position, and female dispositions to conform in two-child families. Child Development, *34*:913-918, 1963.
Schoenbohm, W. B.: Planning and Operating Facilities for Crippled Children. Springfield, Ill., Charles C Thomas, 1962.
Schoenheimer, R.: Dynamic State of Body Constituents. Monograph in Medicine and Public Health No. 3. Cambridge, Harvard University Press, 1942.
Schonfeld, W. A.: Deficient development of masculinity. A psychosomatic problem of adolescence. Am. J. Dis. Child., *79*:17-29, 1950,a.
Schonfeld, W. A.: Inadequate masculine physique as a factor in personality development of adolescent boys. Psychosom. Med., *12*:49-54, 1950,b.
Schramm, W., Lyle, J., and Parker, E. B.: Television in the Lives of Our Children. Stanford, Calif., Stanford University Press, 1961.
Schubert, D. G.: Why gifted junior high school students read. School & Soc., *87*:171-173, 1959.
Schultz, R. E., et al.: A comparison of half-day and regular session pupil achievement in elementary schools. Childhood Educ., *34*:422, 1958.
Schwentker, F. F., et al.: A home play and occupational program for the bedfast child. The counterpane course. Pediat., *7*:44-47, 1951.
Scott, E. M., et al.: Self-selection of diet: Appetites for calcium, magnesium, and potassium. J. Nutrition, *41*:187-201, 1950.
Scott, J. P.: Aggression. Chicago, University of Chicago Press, 1958.
Scott, M. G.: The contributions of physical activity to psychological development. Res. Quart. AAHPER, *31*:307-320, 1960.
Scrimshaw, N. S., and Guzmán, M. A.: The effect of dietary supplementation and the administration of vitamin B_{12} and Aureomycin on the growth of school children. *In* Current Research on Vitamins on Trophology. Proceedings of the Scientific Sessions of the Eighth Annual Meeting, the National Vitamin Foundation, Inc., New York City, March 4, 1953.
Scrimshaw, N. S., et al.: Nutritional problems of children in Central America and Panama. Pediat., *16*:378-397, 1955.
Sears, H.: How to Guarantee That Our Children Will Be Good, Law-abiding Citizens. Santa Monica, California, The First Methodist Sentinel, *37*(32), Jan. 23, 1964.
Sears, P. S.: Doll play aggression in normal young children. Psychol. Monogr., *65*: No. 6, 1951.
Sears, R. R.: A theoretical framework for personality and social behavior. Am. Psychol., *6*:476-483, 1951.
Sears, R. R.: Discipline and behavior of the preschool child. *In* Physical and Behavioral Growth, Report of 26th Ross Pediatric Research Conference, San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.
Sears, R. R.: Identification as a form of behavior development. *In* Harris, D. B. (ed.): The Concept of Development. Minneapolis, University of Minnesota Press, 149-161, 1957.
Sears, R. R.: Personality theory: The next forty years. Monogr. Soc. Res. Child Development, *74*(5):37-50, 1959.
Sears, R. R.: The growth of conscience. *In* Iscoe, I., and Stevenson, H. W. (ed.): Personality Development in Children. Austin, University of Texas Press, 1960.
Sears, R. R.: Relation of early socialization experiences to aggression in middle childhood. J. Abnorm. & Social Psychol., *63*:466-492, 1961.
Sears, R. R., Maccoby, E. E., and Levin, H.: Patterns of Child Rearing. Evanston, Row, Peterson & Co., 1957.
Sears, R. R., et al.: Some child-rearing antecedents of

dependency and aggression in young children. Genet. Psychol. Monogr., *47*:135-234, 1953.
Sebrell, W. H.: Enrichment: a public health approach to better nutrition. Pub. Health Rep., 68:741-746, 1953.
Sechrest, L. B.: The motivation in school of young children: some interview data. J. Exp. Educ., *30*:327-335, 1962.
Seeley, J. R., Sim, R. A., and Loosley, E. W.: Crestwood Heights: A Study of the Culture of Suburban Life. New York, Basic Books, Inc., 1956.
Seidman, J. M.: The Adolescent: A Book of Readings. Rev. ed. New York, Henry Holt & Co., Inc., 1960.
Seidman, J. M.: The Child: A Book of Readings. New York, Rinehart & Co., Inc., 1958.
Selected U.S. Government Publications. No. 39 DD. Catalogue No. F. S. 14. 118;482. Rev. ed., 1963.
Selye, H.: The Stress of Life. New York, McGraw-Hill Book Co., Inc., 1956.
Serot, N., and Teevan, R. C.: Perception of the parent-child relationship and its relation to child adjustment. Child Development, *32*(2):373-378, 1961.
Seth, G.: Psychomotor control in stammering and normal subjects: an experimental study. Brit. J. Psychol., *49*:139-143, 1958.
Sewell, W. H.: Social class and childhood personality. Sociometry, *24*:340-356, 1961.
Shaffer, T. E.: Health services school-age children need. J.A.M.A., *166*:1698-1700, 1958.
Shainess, N.: The structure of the mothering encounter. J. Nerv. & Ment. Dis., *136*:146-161, 1963.
Shaw, J. H.: Nutrition and dental caries. J.A.M.A., *166*:633-637, 1958.
Shedd, C. L.: An exploratory study of the concept of quantity: discrimination of continuous and discontinuous quantities. Educ. Psychol., 5:121-136, 1958.
Shepherd, D. C.: Instrumental avoidance conditioning versus classical conditioning in electrodermal audiometry. J. Speech & Hearing Res., 7(1):55-71, 1964.
Sherrington, C. S.: Man and His Nature. Cambridge, Cambridge University Press, 1951.
Sheviokov, G. R.: War and adolescents. J. Psychol., *14*:161-179, 1942.
Shimizu, J.: A study of language and thought of the child. Jap. J. Educ. Psychol., *4*:225-232, 1957.
Shock, N. W.: Physiological changes in adolescence. *In* Forty-Third Yearbook, National Society for the Study of Education. Part I. Adolescence. Chicago, Department of Education, University of Chicago, 1944.
Shuttleworth, F. K.: The Physical and Mental Growth of Girls and Boys Aged Six to Nineteen in Relation to Age at Maximum Growth. Monogr. IV (3). Washington, D.C., Society for Research in Child Development, National Research Council, 1939.
Shuttleworth, F. K.: The Adolescent Period: A Graphic Atlas. Monogr. XIV (1). Evanston, Ill., Society for Research in Child Development, Inc., 1951,a.
Shuttleworth, F. K.: The Adolescent Period: A Pictorial Atlas. Monogr. XIV (2). Evanston, Ill., Society for Research in Child Development, Inc., 1951,b.
Sidwell, V. D., and Eppright, E. S.: Food habits of Iowa children—breakfast. J. Home Econ., *45*: 401-405, 1953.
Siegel, A. E.: Aggressive behavior of young children in the absence of an adult. Child Development, *28*:371-378, 1957.
Siegel, A. E.: Film-mediated fantasy aggression and strength of aggressive drive. Child Development, *27*:365-378, 1956.
Siegel, A. E.: The influence of violence in the mass media upon children's role expectations. Child Development, *29*:35-56, 1958.
Siegel, A. E., and Kohn, L. G.: Permissiveness, permission, and aggression: The effect of adult presence or absence on aggression in children's play. Child Development, *30*:131-141, 1959.
Sigel, I. E.: Developmental trends in the abstraction ability of children. Child Development, *24*:131-144, 1953.
Sigel, I. E.: The dominance of meaning. J. Genet. Psychol., *85*:201-207, 1954.
Sigel, I. E.: The need for conceptualization in research 241-252, 1956.
Sigel, I. E.: Some future directions for developmental research on problems of cognition. Merrill-Palmer Quart., *6*(4):15-21, 1960.
Sigel, I. E.: Cognitive style and personality dynamics. Interim progress report for National Institute of Mental Health, M-2983, 1961.
Sigel, I. E.: Current research in infant development. Merrill-Palmer Quart., *9*(2):81-82, 1963,a.
Sigel, I. E.: How intelligence tests limit understanding of intelligence. Merrill-Palmer Quart., *9*(1):39-56, 1963,b.
Sigel, I. E.: Sex Differences in Cognitive Functioning Re-examined: A Functional Point of View. A paper presented to the 1963 Biennial Meeting of the Society for Research in Child Development, Berkeley, Calif., 1963,c.
Sillman, J. H.: Serial study of good occlusion to 12 years of age. Am. J. Orthodontics, *37*:481-507, 1951.
Sillman, J. H.: Thumbsucking and the oral structures. J. Pediat., *39*:424-130, 1951.
Silverberg, W. V.: Childhood Experience and Personal Destiny. New York, Springer Publishing Co., 1952.
Simmons, K.: The Brush Foundation Study of Child Growth and Development. II. Physical Growth and Development. Monogr. IX (1). Washington, D.C., Society for Research in Child Development, National Research Council, 1944.
Sitt, P. G.: Progress during infancy. *In* Stuart, H. C., and Prugh, D. C. (ed.): The Healthy Child. Cambridge, Harvard University Press, 1960.
Skemp, R. R.: The need for a schematic learning theory. Brit. J. Educ. Psychol., 32:133-142, 1962.
Skinner, B. F.: Science and Human Behavior. New York, The Macmillan Co., 1953.
Skinner, B. F.: Verbal Behavior. New York, Appleton-Century-Crofts, Inc., 1958.
Skodak, M., and Skeels, H. M.: A final follow-up study of one hundred adopted children. J. Genet. Psychol., 75:85-125, 1949.
Slater, P. E.: Toward a dualistic theory of identification. Merrill-Palmer Quart., 7(2):114-126, 1961.
Slavson, S. R.: Child Psychotherapy. New York, Columbia University Press, 1952.
Slocum, W. L., and Stone, C. L.: Family culture patterns and delinquent-type behavior. Marriage & Family Living, 25:202-208, 1963.
Smart, R. C.: Discussion of certain administrative procedures in nursery schools in land-grant institutions. J. Home Econ., *54*:380-383, 1962.
Smith, A. C., and Reed, G. F.: An experimental in-

vestigation of the relative speeds of left- and right-handed writers. J. Genet. Psychol., *94*:67-76, 1959.
Smith, C. A.: Overuse of milk in the diets of infants and children. J.A.M.A., *172*:567-569, 1960.
Smith, D. A., and Woodruff, M. F. A.: Deficiency Diseases in Japanese Prison Camps. Medical Research Council Special Report Series No. 274. London, His Majesty's Stationery Office, 1951.
Smith, D. C.: Personal and Social Adjustment of Gifted Adolescents. Council of Exceptional Children, 1962.
Smith, D. C., and Wing, L.: Developmental changes in preference for goals difficult to attain. Child Development, *32*:29-36, 1961.
Smith, D. W., et al.: The mental prognosis in hypothyroidism of infancy and childhood. Pediat., *19*:1011-1022, 1957.
Smith. D. W., Patan, K., Therman, E., and Inhorn, S. L.: A new autosomal trisomy syndrome: multiple congenital anomalies caused by an extra chromosome. J. Pediat., *57*:338-345, 1960.
Smith, E. A.: American Youth Culture: Group Life in Teenage Culture. Chicago, The Free Press of Glencoe, 1962.
Smith, K. U., and Smith, W. M.: Perception and Motion: An Analysis of Space-Structured Behavior. Philadelphia, W. B. Saunders, Co., 1962.
Smith, M. F., and Burks, A. J.: Teaching the Slow Learning Child. New York, Harper & Bros., 1954.
Smith, N. B.: Research in reading and the emotions. School & Soc., *81*:8-10, 1955.
Smock, C. D.: Some current research thinking about cognitive processes in children: a symposium. Merrill-Palmer Quart., 6(4):245-249, 1960.
Smock, C. D.: Perceptual sensitization to threat objects as a junction of manifest anxiety. Child Development, *34*:161-167, 1963.
Smock, C. D., and Holt, B. G.: Children's reactions to novelty: an experimental study of "curiosity motivation." Child Development, *33*:631-642, 1962.
Snodgrasse, R. M., et al.: The association between anomalous ossification centers in the hand skeleton, nutritional status and rate of skeletal maturation in children five to fourteen years of age. Am. J. Roentgenol., Rad. Therapy and Nuclear Med., *74*:1037-1058, 1955.
Snyder, L. H.: The Principles of Heredity. 4th ed. Boston, D. C. Heath & Co., 1951.
Soffen, J.: The impact of a group educational program for foster parents. Child Welfare, *41*:195-201, 1962.
Sognnaes, R. F.: Analyses of wartime reduction of dental caries in European children with special regard to observations in Norway. Am. J. Dis. Child., *75*:792-821, 1948.
Solley, C. M., and Murphy, G.: Development of the Perceptual World. New York, Basic Books, Inc., 1960.
Solley, W. H.: Study of physique, change in physique, and speed in the growth patterns of school children, grades 1 - 8. Res. Quart. AAHPER, 465, 478, 1959.
Solnit, A. J.: Hospitalization. An aid to physical and psychological health in childhood. Am. J. Dis. Child., *99*:155-163, 1960.
Solomon, A. L.: Personality and behavior patterns of children with functional defects of articulation. Child Development, *32*:731-737, 1961.
Solomon, M. S.: A study of the longitudinal records of the physical, mental and educational growth of mentally retarded boys. University of Michigan, Unpublished doctoral dissertation, 1958.
Sommers, R. K., Cockerille, C. E., Paul, C. D., Bowser, D. C., Fichter, G. R., Fenton, A. K., and Copetas, F. G.: Effects of speech therapy and speech improvement upon articulation and reading. J. Speech & Hearing Disorders, *26*:27-38, 1961.
Sontag, L. W.: Maternal anxiety during pregnancy and fetal behavior. *In* Physical and Behavioral Growth. Report of 26th Ross Pediatric Research Confernce, San Francisco, October, 1957. Columbus, Ohio, Ross Laboratories, 1958.
Sontag, L. W., Baker, C. T., and Nelson, V. L.: Mental Growth and Personality Development: A Longitudinal Study. Monogr. Soc. Res. Child Development, *23*(2). Lafayette, Ind., Child Development Publications, 1958.
Sorenson, R.: Youth's need for challenge and place in society. Children, 9(4):131-138, 1962.
Spielberger, C. D.: The effects of manifest anxiety on the academic achievement of college students. Ment. Hyg., *46*:420-426, 1962.
Spies, T. D., and Dreizen, S.: The effect of milk supplements on the growth of children with nutritive failure: Wetzel Grid findings. J. Pediat., *34*:393-413, 1949.
Spies, T. D., et al.: Endemic riboflavin deficiency in infants and children. Am. J. M. Sc., *200*:697-701, 1940.
Spies, T. D., et al.: Emotional disturbances in persons with pellagra, beriberi and associated deficiency states. *In* The Role of Nutritional Deficiencies in Nervous and Mental Disease. Research Publ., A. Nerv. & Ment. Dis. Baltimore, The Williams & Wilkkins Co., 1943.
Spies, T. D., et al.: Detection and treatment of nutritive failure in children. J.A.M.A., *148*:1376-1382, 1952.
Spies, T. D., et al.: Skeletal maturational progress of children with chronic nutritive failure. Am. J. Dis. Child., *85*:1-12, 1953.
Spiker, C. C.: Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960.
Spiker, C. C.: Verbal factors in the discrimination learning of children. *In* Wright, J. C., and Kagan, J. (ed.): Basic Cognitive Processes in Children. Monogr. Soc. Res. in Child Development, Series 86, *28*(2):53-68, 1963,a.
Spiker, C. C.: Verbal factors in the discrimination learning of children. *In* Wright, J. C., and Kagan, J. (ed.): Basic Cognitive Processes in Children. Report of the Second Conference Sponsored by the Committee on Intellectual Processes Research of the Social Science Research Council. Monogr. Soc. Res. Child Development, Serial No. 86, *28*(2): 53-71, 1963,b.
Spock, B.: The Common Sense Book of Baby and Child Care. 2nd ed. New York, Duell, Sloan & Pearce, Inc., 1957, Pocket book edition revised also.
Stagner, R.: Homeostasis, need reduction and motivation. Merrill-Palmer Quart., 7(1):49-68, 1961.
Staines, J. W.: Symposium: The development of children's values. III. The self-picture as a factor in the classroom. Brit. J. Educ. Psychol., *28*:97-111, 1958.
Stanback, M.: [Contribution to the study of motor development in foster children.] Enfance, 9(4): 49-59, 1956.

Stanford Institute for Communication Research: Educational Television: The Next Ten Years. Stanford, Calif., 1962.

Starbuck, W. H.: Level of aspiration. Psychol. Rev., *70*(1):51-60, 1963.

Statistical Abstracts of U.S.A. Statistical Reports Division, Census Bureau, U.S. Government Printing Office, 1963.

Stavél, J.: Hlad: [Hunger: a contribution to the analysis of instincts.] Publ. Philos. Faculty Comenius Univ. No. 26, Bratislava, 1936. Cited in Keys, A., et al.: The Biology of Human Starvation. Minneapolis, University of Minnesota Press, 1950.

Stearns, G.: Nutritional state of the mother prior to conception. J.A.M.A., *168*:1655-1659, 1958.

Steele, B. F., et al.: Role of breakfast and between-meal foods in adolescent's nutrient intake. J. Am. Dietet. A., *28*:1054-1057, 1952.

Steigman, M. J., and Stevenson, H. W.: The effect of pretraining reinforcement schedules on children's learning. Child Development, *31*(1):53-58, 1960.

Stein, K. F., et al.: Influence of heredity in the etiology of malocclusion. Am. J. Orthodont., *42*:125-141, 1956.

Steiner, M. M.: The Fat Child. Pediat. Clin. North America. Philadelphia, W. B. Saunders Co., May, 1955.

Stendler, C. B.: Possible causes of overdependency in young children. Child Development, *25*:125-146, 1954.

Stern, C.: The chromosomes of man. *In* Symposium of Genetics in Medical Research. J. Med. Educ., *34*:310-314, 1959.

Stern, C.: Principles of Human Genetics. 2nd ed. San Francisco, W. H. Freeman & Co., 1960.

Stevenson, H. W.: Learning of complex problems by normal and retarded subjects. Am. J. Ment. Deficiency, *64*:1021-1026, 1960.

Stevenson, H. W.: Social reinforcement with children as a function of C. A., sex of examiner and sex of subject. J. Abnorm. & Social Psychol., *63*:147-154, 1961.

Stevenson, H. W.: Discussion of Spiker's paper reported to the Second Conference Sponsored by the Committee on Intellective Processes Research of the Social Science Research Council. Monogr. Soc. Res. Child Development, Series 86, *28*(2):69-71, 1963.

Stevenson, H. W., and Knights, R. M.: Social reinforcement with normal and retarded children as a function of pretraining, sex of E, and sex of S. Am. J. Ment. Deficiency, *66*:866-871, 1962.

Stevenson, H. W., and Stevenson, N. G.: Social interaction in an interracial nursery school. Genet. Psychol. Monogr., *61*:37-73, 1960.

Stevenson, H. W., and Stewart, E. C.: A developmental study of racial awareness in young children. Child Development, *29*:400-409, 1958.

Stiebling, H. K.: Trends in family food consumption. J. Am. Dietet. A., *26*:596-598, 1950.

Stieglitz, E. J.: Geriatric Medicine: Medical Care of Later Maturity. 3rd ed. Philadelphia, J. B. Lippincott Co., 1954.

Stiles, G. E.: Relationship of unmet emotional needs to accident-repeating tendencies in children. Unpublished doctoral thesis, New York University, 1957.

Stock, M. B., and Smyth, P. M.: Does undernutrition during infancy inhibit brain growth and subsequent intellectual development? Arch. Dis. Childhood, *38*:546-552, 1963.

Stoddard, G. D.: The Long Step from Research to Practice. Monogr. Soc. Res. Child Development, *24*(5):69-78, 1959.

Stoddard, H. M.: The relation of parental attitudes and achievements of severely mentally retarded children. Am. J. Ment. Deficiency, *63*:575-598, 1959.

Stolz, H. R., and Stolz, L. M.: Somatic Development of Adolescent Boys. New York, The Macmillan Co., 1951.

Stolz, L. M.: Effects of maternal employment on children: evidence from research. Child Development, *31*:749-782, 1960.

Stolz, L. M., et al.: Father Relations of War-born Children. Stanford, Calif., Stanford University Press, 1954.

Stott, D. H.: An empirical approach to motivation based on the behavior of a young child. J. Child Psychol. & Psychiat., *2*:97-117, 1961.

Stott, D. H.: Delinquency and cultural stress. Brit. J. Social & Clin. Psychol., *1*:182-191, 1962,a.

Stott, D. H.: Abnormal mothering as a cause of mental subnormality: I. A critique of some classic studies of maternal deprivation in the light of possible congenital factors. J. Child Psychol. & Psychiat., *3*(2):79-91, 1962,b.

Stott, L. H.: The Longitudinal Study of Individual Development. Detroit, The Merrill-Palmer School, 1955.

Stott, L. H.: Personality at age four. Child Development, *33*:287-311, 1962.

Stott, L. H., and Ball, R. S.: Consistency and change in ascendance–submission in the social interaction of children. Child Development, *28*:259-272, 1957.

Strand, G. T., and Larson, W. R.: Five professions view the unmarried parent. Internat. J. Social Psychiat., *6*:269-276, 1960.

Strang, R.: An Introduction to Child Study. 4th ed. New York, The Macmillan Co., 1959.

Strang, R.: A dynamic theory of the reading process. Merrill-Palmer Quart., *7*(4):239-245, 1961.

Strauss, B. S.: An Outline of Chemical Genetics. Philadelphia, W. B. Saunders Co., 1960.

Strauss, M. A.: Interaction with retarded siblings and life goals of children. Marriage & Family Living, *25*:96-98, 1963.

Strickland, R. G.: The Language Arts in the Elementary School. 2nd ed. Boston, D.C. Heath & Co., 1957.

Strong, E. K., Jr.: Permanence of interest scores over 22 years. J. Appl. Psychol., *35*:89-91, 1951.

Stuart, H. C.: Studies of the nutritional state of children in unoccupied France in the fall of 1942. J. Pediat., *25*:257-264, 1944.

Stuart, H. C.: Review of the evidence as to the nutritional state of children in France. Am. J. Pub. Health, *35*:299-307, 1945.

Stuart, H. C., and Prugh, D. G. (ed.): The Healthy Child: His Physical, Psychological and Social Development. Cambridge, Harvard University Press, 1962.

Stuart, H. C., and Stevenson, S. S.: Physical Growth and Development. *In* Nelson, W. E. (ed.): Textbook of Pediatrics. 7th ed. Philadelphia, W. B. Saunders Co., 1959.

Stunkard, A., and Pestka, A.: The physical activity of

obese girls. Am. J. Dis. Child.: *103*:812-817, 1962.
Sturgis, P. T.: What are some of the positive reinforcers suitable for preschool children? Paper presented to Western Psychological Association, Eugene, Oregon, 1957.
Subrahmanyan, V., et al.: The effect of a supplementary multipurpose food on the growth and nutritional status of school children. Brit. J. Nutrition, *11*:382-388, 1957.
Suchman, J. R.: Observation and Analysis in Child Development: A Laboratory Manual Keyed to Five Textbooks. New York, Harcourt, Brace and Co., 1959.
Suchman, J. R.: Inquiry Training: Building Skills for Autonomous Discovery. Merrill-Palmer Quart., 7(3):147-169, 1961.
Suinn, R. M.: The relationship between self-acceptance and acceptance of others: a learning theory analysis. J. Abnorm. & Social Psychol., *63*:37-42, 1961.
Sullivan, H. S.: Exerpts from Lecture II, "The Human Organism and Its Necessary Environment." J. Biol. & Path. Interper. Relations. No. 1, V. 3, Feb., 1940,a.
Sullivan, H. S.: Psychiatry. J. Biol. & Path. Interper. Relations, No. 1, V.3, Feb., 1940,b.
Sumption, M. R., and Luecking, E. M.: Education of the Gifted. New York, The Ronald Press Co., 1960.
Survey Research Center: A Study of Adolescent Boys. Inst. for Soc. Research, University of Michigan, 1955.
Survey Research Center: The Needs and Interests of Girls. Inst. for Soc. Research, University of Michigan, 1956.
Survey Research Center: The Program of the Girl Scouts of the U.S.A. Inst. for Soc. Research, University of Michigan, 1958.
Sussman, S.: Narcotic and methamphetamine use during pregnancy. Am. J. Dis. Child., *106*:325-330, 1963.
Sutton-Smith, B., Roberts, J. M., and Rosenberg, B. G.: Sibling association and role involvement. Merrill-Palmer Quart., *10*(1):25-38, 1964.
Sutton-Smith, B., and Rosenberg, B. G.: Peer perceptions of impulsive behavior. Merrill-Palmer Quart., 7(4):233-238, 1961,a.
Sutton-Smith, B., and Rosenberg, B. G.: Sixty years of historical change in the game preferences of American children. J. Amer. Folklore, *74*:17-46, 1961,b.
Sutton-Smith, B., Rosenberg, B. G., and Morgan, E. F., Jr.: Sex differences in role preference for play activities and games. Paper presented at biennial meeting of Soc. Res. Child Development, University Park, Pa., March 15, 1961,c.
Sutton-Smith, B., Rosenberg, B. G., and Morgan, E. F., Jr.: Development of sex differences in play choices during preadolescence. Child Development, *34*:119-126, 1963.
Swyer, P. R., Reiman, R. C., and Wright, J. J.: Ventilation and ventilatory mechanics in the newborn. J. Pediat., *56*:612-622, 1960.
Symonds, P. M., and Jensen, A. R.: Psychoanalytic concepts and principles discernible in projective personality tests. Am. J. Orthopsychiat., *28*:73-84, 1958.
Symonds, P. M. and Jensen, A. R.: From Adolescent to Adult. New York, Columbia University Press, 1961.
Taba, H.: Cultural deprivation as a factor in school learning. Merrill-Palmer Quart., *10*(2):147-159, 1964.
Taguchi, T.: A study of the structure of colloquial Japanese from the standpoint of developmental psychology. Jap. J. Psychol., *33*(4):193-201, 1962.
Talbot, N. B., Sobel, E. H., McArthur, J. W., and Crawford, J. D.: Functional Endocrinology from Birth through Adolescence. Cambridge, Harvard University Press, 1952.
Tanner, J. M.: The Evaluation of Physical Growth and Development, in Modern Trends in Paediatrics. London, Butterworth & Co., Ltd., 1958.
Tanner, J. M. (ed.): Human Growth. Symposia Society for the Study of Human Biology. Vol. III. New York, Pergamon Press, Inc., 1960.
Tanner, J. M.: Education and Physical Growth. Warwick, University of London Press, 1961.
Tanner, J. M.: Growth at Adolescence. 2nd ed. Springfield, Ill., Charles C Thomas, 1962.
Tanner, J. M.: The regulation of human growth. Child Development, *34*:817-847, 1963.
Tapia, F., Jekel, J., and Domke, H. R.: Enuresis: an emotional symptom? J. Nerv. & Ment. Dis., *130*:61-66, 1960.
Tasch, R. J.: The role of the father in the family. J. Exper. Educ., *20*:319-361, 1952.
Tauber, C., and Tauber, I. B.: The Changing Population of the United States. New York, John Wiley & Sons, Inc., 1958.
Taylor, C. M., et al.: The energy expenditure for quiet play and cycling of boys 7 to 14 years of age. J. Nutrition, *35*:511-521, 1948,a.
Taylor, C. M., et al.: The energy expenditure of 9 to 11 year old boys and girls (1) standing drawing and (2) dressing and undressing. J. Nutrition, *36*:123-131, 1948,b.
Taylor, J. A.: A personality scale of manifest anxiety. J. Abnorm. & Social Psychol., *48*:265-290, 1953.
Televison and Education. A Bibliography. No. 2. New York, Television Information Office, 1962.
Television and Juvenile Delinquency. Report of the Committee on the Judiciary, United States Senate. Washington, D.C., U.S. Government Printing Office, 1964.
Templin, M. C.: Certain Language Skills in Children. Minneapolis, University of Minnesota Press, 1957.
Terekhova, O. P.: On the generalization of forms of analysis. Vop. Psikhol., *4*:83-92, 1960.
Terman, L. M., and Merrill, M.: Stanford-Binet Intelligence Scale: Manual for the Third revision Form L-M. Boston, Houghton Mifflin Co., 1960.
Terman, L. M., and Oden, M. H.: Genetic Studies of Genius. Vol. IV. The Gifted Child Grows Up. Stanford, Calif., Stanford University Press, 1947.
Terman, L. M., and Oden, M. H.: Genetic Studies of Genius, Vol. V. The Gifted Group at Mid-Life: Thirty-five Years' Follow-up of the Superior Child. Stanford, Calif., Stanford University Press, 1959.
Terman, L. M., and Tyler, L. E.: Psychological sex differences. *In* Carmichael, L. (ed.): Manual of Child Psychology. 2nd ed. New York, John Wiley & Sons, Inc., 1954.
Thomas, A., Birch, H. G., Chess, S., Hertzig, M. E., and Korn, S.: Behavioral Individuality in Early Childhood. New York, New York University Press, 1964.
Thompson, B., and Finlayson, A.: Married women who work. Brit. J. Sociol., *14*(2):150-168, 1963.
Thompson, G. C.: Child Psychology: Growth Trends and Adjustments. Boston, Houghton Mifflin Co., 1952.

Thorndike, R. L.: Words and the comics. J. Exper. Educ., *10*:110-113, 1941.
Throne, F. M., Schulman, J. L., and Kaspar, J. C.: Reliability and stability of the Wechsler Intelligence Scale for children for a group of mentally retarded boys. Amer. J. Ment. Deficiency, *67*:455-457, 1962.
Tibbets, J. R.: The role of parent-child relationship in the achievements of high school pupils. Dissert Abstr., *15*:232, 1955.
Todd, T. W.: Atlas of Skeletal Maturation (Hand). St. Louis, The C. V. Mosby Co., 1937.
Todd, T. W.: Objective ratings of the constitution of the growing child, based on examination of physical development and mental expansion. Am. J. Dis. Child., *55*:149-159, 1938.
Toman, W.: Family Constellation. New York, Springer Publication Co., 1961.
Torrance, E. P.: Factors affecting creative research thinking in children: an interim research report. Merrill-Palmer Quart., *71*:171-180, 1961.
Torrance, E. P.: Guiding Creative Talent. Englewood Cliffs, N.J., Prentice-Hall, Inc., 1962.
Toverud, G.: Introductory review. *In* A Survey of the Literature of Dental Caries. Food and Nutrition Board, National Research Council Publ. 225. Washington, D.C., National Academy of Sciences-National Research Council, 1952.
Toverud, G.: The influence of war and post-war conditions on the teeth of Norwegian school children. II. Caries in the permanent teeth of children aged 7-8 and 12-13 years. Milbank Mem. Fund. Quart., *35*:127-196, 1957.
Traisman, A. S., and Traisman, H. S.: Thumb- and finger sucking: a study of 2650 infants and children. J. Pediat., *52*:566-572, 1958.
Trankell, A.: The influence of choice of writing hand on the handwriting. Brit. J. Psychol., *26*:94-103, 1956.
Trulson, M. F., et al.: Growth and development of Peruvian children. I. Carquin and San Nicholas. Pediat., *17*:510-528, 1956.
Tuma, E., and Livison, N.: Family socio-economic status and adolescent attitudes to authority. Child Development, *31*:387-399, 1960.
Turner, N. C.: A biochemical pattern basic to tooth decay. J. Am. Dent. A., *61*:20-21, 1960.
Tuttle, W. W., et al.: Influence of various levels of thiamine intake on physiologic response. III. Reaction time. J. Am. Dietet. A., *25*:21-27, 1949.
Tuttle, W. W., et al.: Effect of omitting breakfast on the physiologic response of men. J. Am. Dietet. A., *26*:332-335, 1950.
Tyerman, M. J.: A research with truancy. Brit. J. Educ. Psychol., *28*:217-225, 1958.
Tyler, L. E.: Tests and Measurements. Englewood Cliffs, N.J., Prentice-Hall, Inc., 1963.
Unger, S. M.: Antecedents of personality differences in guilt responsibility. Psychol. Rep., *10*:357-358, 1962.
United Nations Educational and Cultural Organization (UNESCO): Statement on Race. Paris, April 11, 1952.
United States Bureau of the Census: Statistical Abstracts of the United States, 1961. Ed. 82. Washington, D.C., 1961.
United States Department of Agriculture: Consumption of Food in the United States, 1909-1952. Supplement for 1957 to Agriculture Handbook No. 62. Washington, D.C., United States Department of Agriculture, Agricultural Marketing Service, 1958.
United States Department of Health, Education, and Welfare. When You Adopt a Child. Washington, D.C., U.S. Dept. Health, Education, and Welfare, 1958.
United States Department of Health, Education, and Welfare: Parent Education and the Behavioral Sciences. Children's Bureau Publication No. 379, Washington, D.C., U.S. Dept. Health, Education, and Welfare, 1960.
United States Department of Health, Education, and Welfare. Your Child from One to Six. Children's Bureau Publication No. 30. Washington, D.C., U.S. Dept. Health, Education, and Welfare, 1962.
United States Department of Health, Education, and Welfare: A note on educational televison: Facilities Act of 1962. Children, *10*(6): 240, 1963.
Updegraff, R., and Keister, M. E.: A Study of Children's Reactions to Failure and an Experimental Attempt to Modify Them. University of Iowa Studies in Child Welfare, *13*(4), 1937.
Valadian, I., Stuart, H. C., and Reed, R. B.: Studies of illnesses of children followed from birth to eighteen years. Monogr. Soc. Res. Child Development, *26*(3), 1961.
Valaoras, V. G.: Some effects of famine on the population of Greece. Milbank Mem. Fund Quart., *24*: 215-234, 1946.
Válková, Z., Trnka, V., Vávra, J., and Zingerová, O.: [Cystometric investigation in children with enuresis.] Cesk. Pediat., *17*:216-224, 1962.
Vamberová, M., Pařizkova, J., and Tejralovag, J.: [The effects of puberty on the development of obesity.] Cesk. Pediat., *17*:1057-1064, 1962.
Van Krevelen, A.: Characteristics which "identify" the adolescent to his peers. J. Social Psychol., *56*: 285-289, 1962.
Van Laar, F., Rusbach, H. W., and De Haas, J. H.: [Menstrual disorders in school-going adolescents.] T. Soc. Geneesk., 44-48, 1962.
Verma, R. M.: Sociological variables and intelligence of the school-going population. Educ. & Psychol., *5*:165-170, 1958.
Vernon, M. D.: Backwardness in Reading. New York, Cambridge University Press, 1957.
Veroff, J.: Theoretical background for studying the origins of human motivational dispositions. Merrill-Palmer Quart. *11*(1):3-19, 1965.
Vilter, R. W.: The metabolism of vitamin B_6 in human beings. Am. J. Clin. Nutrition, *4*:378-385, 1956.
Vincent, C. E.: Readings in Marriage Counseling. New York, Thomas Y. Crowell Co., 1957.
Vincent, E. L., and Martin, P. C.: Psychological Development. New York, The Ronald Press Co., 1960.
Wachstein, M.: Evidence of abnormal vitamin B_6 metabolism in pregnancy and various disease states. Am. J. Clin. Nutrition, *4*:369-377, 1956.
Wadsworth, G. R.: Menstrual characteristics of women living in a tropical climate. J. Obst. & Gynaecol. Brit. Emp., *60*:110-113, 1953.
Wagner, R., Cohen, M. M., and Hunt, E. E.: Dental development in idiopathic sexual precocity, congenital adrenocortical hyperplasia, and adrenogenic virilism. J. Pediat., *63*:566-576, 1963.
Wahl, C. W.: The fear of death. Bull. Menninger Clinic. *22*:214-225, 1958.
Walk, R. D., and Dodge, S. H.: Visual depth perception of a ten-month old monocular human infant. Science, *137*:529-530, 1962.
Walker, J. S., Margolis, F. J., Teate, H. L., Jr., Weil, M. L., and Wilson, H. L.: Water intake of normal children. Science, *140*:890-891, 1963.
Walker, R. N.: Bodily build and behavior in young

children: I. Bodily build and nursery school teachers' ratings. Monogr. Soc. Res. Child Development, Series 84, *27*(3), 1962.
Walker, R. N.: Body build and behavior in young children: II. Body build and parent's ratings. Child Development, *34*:1-23, 1963.
Walsh, A.: Self-concepts of bright boys with learning difficulties. New York, Columbia University Press, 1956.
Walters, R. H., and Demkow, L.: Timing of punishment as a determinant of response inhibition. Child Development, *34*:207-214, 1963.
Walters, R. H., and Zaks, M. S.: Changes in responses to a set of personality-inventory items as a function of age. J. Consult. Psychol., *22*:458, 1958.
Wann, K. C., and Liddle, E. A.: Fostering Intellectual Development in Young Children. New York, Teachers College, Columbia University, 1962.
Warden, C. J., & Cohen, A.: A study of certain incentives applied under school conditions. Pedagog. Semin. & J. Genet. Psychol., *39*:320-327, 1931.
Washburn, A. H.: The child as a person developing. I. A philosophy and program of research. Am. J. Dis. Child., *94*:46-53, 1957,a.
Washburn, A. H.: The child as a person developing. II. More questions raised than answered. Am. J. Dis. Child., *94*:54-63, 1957,b.
Washburn, A. H.: Appraisal of healthy growth and development from birth to adolescence. *In* McQuarrie, I., and Kelley, V. C. (ed.): Brennermann's Practice of Pediatrics. Vol. I. Hagerstown, Md., W. F. Prior Co., Inc., 1959, Chapter 8.
Waterlow, J. C. (ed.): Protein Malnutrition. Proceedings of a conference in Jamaica (1953) sponsored jointly by the Food and Agricultural Organization of the United Nations World Health Organization, Josiah Macy Jr. Foundation. New York, Cambridge University Press, 1955.
Watson, E. H., and Lowrey, G. H.: Growth and Development of Children. 4th ed. Chicago, Year Book Book Publishers, Inc., 1962.
Webb, A. P.: Sex-role preferences and adjustment in early adolescents. Child Development, *34*:609-618, 1963.
Weber, E. W.: Mentally Retarded Children and Their Education. Springfield, Ill., Charles C Thomas, 1963.
Webroff, J.: Research related to origins of behavior. Merrill-Palmer Quart., *9*(2):115-122, 1963.
Wedell, K.: The visual perception of cerebral palsied children. J. Child Psychol. & Psychiat., *1*:215-227, 1960.
Weiland, I. H., and Steisel, I. M.: An analysis of manifest content of the earliest memories of children. J. Genet. Psychol., *92*:4-52, 1958.
Weiner, J. S., and Thambipillai, V.: Skeletal maturation of W. African Negroes. Am. J. Phys. Anthropol., *10*:407-418, 1952.
Weinert, F.: [A study of some conditions of language learning in children and adolescents.] Vita Humana, *5*:185-194, 1962.
Weinreb, J. (ed.): Recent Developments in Psychoanalytic Child Therapy. New York, International Universities Press, 1961.
Wells, O. V.: Current food trends. Nutrition Rev., *17*:161-164, 1959.
Werner, E., and Gallistel, E.: Predictions of outstanding performance, delinquency, and emotional disturbance from child evaluations. Child Development, *32*(2):255-260, 1961.
Westcott, R.: The problems of report cards. Nat. Educ. A. J., *44*:34-36, 1955.
Wetzel, N. C.: Assessing the physical condition of children. III. The components of physical status and physical progress and their evaluation. J. Pediat., *22*:329-361, 1943.
Wetzel, N. C.: Growth. *In* Glasser, O. (ed.): Medical Physics. Chicago, Year Book Publishers, Inc., 1944.
Wetzel, N. C.: The baby grid. J. Pediat., *29*:439-454, 1946.
Wetzel, N. C.: The Treatment of Growth Failure in Children. Cleveland, NEA Service, Inc., 1948.
Wheeler, D. K.: Development of the ideal self in Western Australian youth. J. Educ. Res., *54*:163-167, 1961.
Wheeler, D. K.: The adolescent at school in Western Australia. Austral. J. Educ., *6*:191-200, 1962.
White, B. L., Castle, P., and Held, R.: Observations on the development of visually directed reaching. Child Development, 35:349-364, 1964.
White, M. E., and Harris, M. W.: The School Psychologist. New York, Harper & Bros., 1961.
White, R. W.: Motivation reconsidered: the concept of competence. Psychol. Rev., *66*:297-333, 1959.
White, S. H., and Spiker, C. C.: The effects of a variable conditioned stimulus upon the generalization of an instrumental response. Child Development, *31*:313-319, 1960.
Whitehead, F. E.: Nutrition education for children in the U. S. since 1900. Part II. Am. J. Dietet. A., *33*:885-889, 1957.
Whiting, B. B. (ed.): Six Cultures: Studies in Child Rearing. New York, John Wiley & Sons, Inc., 1963.
Whiting, J. W. M.: Resource mediation and learning by identification. *In* Iscoe, I., and Stevenson, H. W. (ed.): Personality Development in Children. Austin, Texas, University of Texas Press, 1960.
Whiting, J. W. M., Chasdi, E. M., Antonovsky, H. F., and Ayres, B. C.: The learning of values. *In* Vogt, E. Z., and Roberts, J. M. (ed.): The Peoples of Rimrock. Vol. I. Evanston, Ill., Row, Peterson & Co., 1963.
Whiting, J. W. M., and Child, I. L.: Child Training and Personality: A Cross Cultural Study. New Haven, Yale University Press, 1953.
Widdowson, E. M.: Mental contentment and physical growth. Lancet, *1*:1316-1318, 1951.
Wiener, G., Rider, R. V., and Oppel, W.: Some correlates of I.Q. changes in children. Child Development, *34*:61-67, 1963.
Wilkins, L.: The Diagnosis and Treatment of Endocrine Disorders in Childhood and Adolescence. 2nd ed. Springfield, Ill., Charles C Thomas, 1957.
Williams, J. M.: Children who break down in foster homes: a psychological study of patterns of personality growth in grossly deprived children. J. Child Psychol. & Psychiat., *2*:50-70, 1961.
Williams, R. J.: Biochemical Individuality. New York, John Wiley & Sons, Inc., 1956.
Wilson, D. C., and Sutherland, I.: Age of menarche in the tropics. Brit. M. J., *2*:607-608, 1953.
Wilson, F. T.: Educators' opinions about acceleration of gifted children. School & Society, *80*:120-122, 1954.
Winch, R. F.: Identification and Its Family Determinants. Indianapolis, Bobbs-Merrill Co., 1962.
Winder, C. L., and Rau, L.: Parental attitudes associated with social deviance in preadolescent boys. J. Abnorm. & Social Psychol., *64*:418-424, 1962.
Wingate, M. E.: Evaluation and stuttering. Part I:

Speech characteristics of young children. J. Speech & Hearing Disorders, *27*:106-115, 1962,a.

Wingate, M. E.: Evaluation and stuttering: II. Environmental stress and critical appraisal of speech. J. Speech & Hearing Disorders, *27*:244-257, 1962,b.

Winick, C.: Teenagers, satire, and Mad. Merrill-Palmer Quart., *8*(3):183-203, 1962.

Winitz, H.: Language skills of male and female kindergarten children. J. Speech & Hearing Res., *2*:377-386, 1959.

Winitz, H., and Irwin, O. C.: Infant speech: consistency with age. J. Speech & Hearing Disorders, *1*:245-249, 1958,a.

Winitz, H., and Irwin, O. C.: Syllabic and phonetic structure of infants' early words. J. Speech & Hearing Disorders, *1*:250-256, 1958,b.

Winterbottom, M. R.: The relation of need for achievement to learning experiences in independency and mastery. *In* Atkinson, J. W. (ed.): Motives in Fantasy, Action and Society. Princeton, N.J., D. Van Nostrand, Inc., 1958, pp. 450-478.

Witkin, H. A., Dyk, R. B., Faterson, H. F., Goodenough, D. R., and Karp, S. A.: Psychological Differentiation. New York, John Wiley & Sons, Inc., 1962.

Wittenborn, J. R.: A study of adoptive children. Psychol. Monogr. *70*(No. 1-3), 1956.

Witty, P. A.: Reading the comics—a comparative study J. Exper. Educ., *10*:105-109, 1941.

Witty, P. A.: Educational provision for gifted children. School and Soc., *76*:177-181, 1952,a.

Witty, P. A.: Children's interest in radio, motion pictures and television. Educ. Admin. and Supervision, *38*:138-147, 1952,b.

Witty, P. A.: Children and TV—a sixth report. Elem. English, *32*:469-476, 1955.

Witty, P. A.: Some results of eight yearly studies of TV. School and Soc., *86*:287-289, 1958.

Witty, P. A.: A tenth yearly study and comments on a decade of televiewing. Elem. English, *36*:581-586, 1959.

Witty, P. A., and Kinsella, P.: Children and TV—a ninth report. Elem. Eng. *35*:450-456, Nov., 1958.

Wohlwill, J. F.: From perception to inference: a dimension of cognitive development. *In* Kessen, W., and Kuhlman, C. (ed.): Thought in the Young Child. Monogr. *27*(2). Soc. Res. Child Development. Lafayette, Ind., Child Devel. Pubs., 1962.

Wohlwill, J. F.: Teaching machine: psychology's new hobbyhorse. Teach. Col. Rec., *64*:139-146, 1962.

Wohlwill, J. F., and Lowe, R. C.: Experimental analyses of the development of the conservation of number. Child Development, *33*(1):153-167, 1962.

Wolff, P. H.: Observation on newborn infants. Psychosom. Med., *21*:110-118, 1959.

Wolff, P. H.: The Developmental Psychologies of Jean Piaget and Psychoanalyses. New York, International Universities Press, 1960.

Wood, N. E. (ed.): Language Development and Language Disorders: A Compendium of Lectures. Monogr. *25*(3). Soc. Res. Child Development Lafayette, Ind., Child Devel. Pubs., 1960.

Woods, G. E.: Cerebral Palsy in Childhood. Bristol, England, John Wright & Sons, Ltd., 1957.

Woods, Schools: Heuristic Hypotheses about the Variant Child in Our Culture. Symposium. Langhorne, Pa., May 17, 1961.

Woronoff, I.: An investigation of the relationship of some pre-adolescent developmental factors to adolescent social adjustment. J. Educ. Res., *56*:164-166, 1962.

Wright, J. C.: In a review and summary of the Basic Cognitive Processes in Children. Report of a second conference. *In* Child Development Abstracts & Bibliography, June-August, 1963.

Wright, J. C., and Kagan, J.: Basic Cognitive Processes in Children: Report of the Second Conference Sponsored by the Committee on Intellective Processes: Research of the Social Science Research Council Soc. for Res. in Child Development, Monographs: Series 86, *28*(2), 1963.

Wright, S. W.: Phenylketonuria, J.A.M.A., *165*:2079-2083, 1957.

Wurtz, K. R.: Some theory and data concerning the attenuation of aggression. J. Abnorm. & Social Psychol., *60*:134-136, 1960.

Yamamoto, K.: Role of creative thinking and intelligence in high school achievement. Psychol. Rep., *14*:783-789, 1964.

Yamazaki, I. N., et al.: Outcome of pregnancy in women exposed to the atomic bomb in Nagasaki. Am. J. Dis. Child., *87*:448-463, 1954.

Yarrow, L. J.: Maternal deprivation: toward an empirical and conceptual re-evaluation. Psychol. Bull., *58*:459-490, 1961.

Yarrow, L. J.: Research in dimensions of maternal care. Merrill-Palmer Quart., *9*(2): 101-114, 1963.

Yarrow, M. R.: The Measurement of Children's Attitudes and Values. *In* Mussen, P. (ed.): Handbook of Research Methods in Child Development. New York, John Wiley & Sons, Inc., 1960, Chapter 16.

Yarrow, M. R., and Campbell, J. D.: Person perception in children. Merrill-Palmer Quart., *9*(1):57-72, 1963.

Yarrow, M. R., Scott, P., De Leeuw, L., and Heinig, C.: Child-rearing in families of working and nonworking mothers. Sociometry, *25*:122-140, 1962.

Yates, A. J.: Delayed auditory feedback. Psychol. Bull., *60*:(3):213-232, 1963.

Young, P. J.: Psychologic factors regulating the feeding process. Am. J. Clin. Nutrition, *5*:154-161, 1957.

Zarrelli, C. L.: A Critical Analysis of the Royal Commission Report on Homosexuality and Prostitution. A paper presented to the American Association for the Advancement of Science, December 27, 1957.

Zazzo, René: [A team study of mental deficiency.] Enfance, Nos. 4/5, 335-336, 1960.

Zeaman, D., and House, B. J.: Approach and avoidance in the discrimination learning of retardates. Child Development, *33*:355-372, 1962.

Zeigler, H. P.: Displacement activity and motivational theory. Psychol. Bull., *61*(5):362-376, 1964.

Zimmerman, D. W.: Functional laws and reproducible processes of behavior. Psycho. Rec., *13*:163-173, 1963.

Zolik, E. S.: A comparison of the Bender Gestalt reproductions of delinquents and non-delinquents. J. Clin. Psychol., *14*:24-26, 1958.

Zuk, G. H.: Sex-appropriate behavior in adolescence. J. Genet. Psychol., *93*:15-32, 1958.

Zuk, G. H., Miller, R. L., Bartram, J. B., and Kling, F.: Maternal acceptance of retarded children: A questionnaire study of attitudes and religious background. Child Development, 32:525-540, 1961.

Zunich, M.: The relation between junior high-school students' problems and parental attitudes toward child rearing and family life. J. Educ. Res., *56*:134-138, 1962.

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